RAILROAD GAZETTE

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Contributions

The Scientific Man on the Railroads.

TO THE EDITOR OF THE RAILROAD GAZETTE.

There was recently received at one of the prominent engineering schools of the country a letter, from which the following is extracted:

"I want a young man, quick, accurate computer, accustomed to computing for and constructing curve diagrams. Preferably experienced in handling virtual profiles and questions of engine performance, train resistance, momentum, etc. Do you know of any recent graduates who have been drilled in above line and had a little outside experience?"

This letter, from a Chief Engineer, is interesting as an indication of the growth of scientific railroad location and betterment. It would have been a very curious letter ten years ago and practically an impossibility 20 years ago. Just what this Chief Engineer wishes was laughed at a few years since, and many able operating managers smile even now at the mention of virtual profiles and velocity of grades.

The better engineering schools of this country are now training men to do the very work required by this Chief Engineer, and they are likely soon to be the successful operating managers of our great roads. X. Y. Z.

Hauling Small Cars, Continuous Draft Gear—Water to Obtain Adhesion.

Lansdowne, Pa., Jan. 26, 1901.

TO THE EDITOR OF THE RAILROAD GAZETTE.

The articles in your issue of Jan. 11, bearing upon above-named subjects, proved of more than passing interest to the writer. From 1869 until 1880 it was my good fortune to have charge of the Car Department of the Westmoreland Coal Company, with headquarters at Irwin, Pa.

About 1876, or early in 1877, two of our cars, of hopper type, were rebuilt at Allison's shops and furnished with continuous drawbars of a type shown in the accompanying drawing. This bar, as will be noted, drew its car

from the end opposite to the one attached to the locomotive. Thus, the tendency was to keep all parts of the car body drawn together and almost entirely eliminate the tendency to pull everything apart, which always obtains to a greater or less extent where cars are drawn in the customary manner. Besides, the body of each car was subjected to no greater drawing strain if 100 cars were in the train than when it was drawn alone.

The device was simply a rod of iron about 2 in. in diam., slotted at each end for a draught key, and built up and flattened at the points where it passed between the center plates and body transoms, besides being perforated at these points with oval holes to permit the passing through of the transom bolts. The draught springs were upon the rod immediately behind the drawhead, and a washer of 1-in. iron, 4 in. x 4 in., was placed at each end of the spring. The key, of course, was inside of the drawhead, and between the back washer and the transom a block of wood was placed. This was bored lengthwise to permit the passage of the rod, and its object was to receive the strain and draw, or rather push, the car; and also to receive the blow when cars bumped together.

The Pennsylvania Railroad Company refused permission to apply it to any more of our cars, as they feared that in case of breakage delay would occur owing to the great difference between this gear and their standard. In practice, however, we had very little trouble, if any, from this cause, and my connection with the company continuing almost four years after the introduction of the device, gave ample opportunity to observe its service closely. Repairs to the bodies of the cars so equipped were much less than to other cars of the same type and in similar service, and work on draught timbers and draught bolts was reduced to almost zero.

Two objections were offered by practical men, and were probably the only ones which might have had a substantial foundation. One was that in a train of any length the engine did not, at starting, have the advantage afforded by the buffer springs as in the case of cars equipped in the ordinary way, as with the continuous bar, as used by us, only the springs at the rear ends of the cars came into action, and thus the starting more nearly resembled a dead pull. This, of course, could have been remedied by dividing the rod in the center and uniting the ends at that place by a yoke with enclosed spring. In fact, the cars of the I. B. & W. R. R. were at that time nearly all equipped with a continuous drawbar like ours with the exception that it was divided at the center, and the ends united by a sort of turnbuckle, but without any spring. This was evidently done to facilitate repairs in case of damage to one end.

The other objection offered was the groove of 1 in. cut across the bottom of the body transom to enable the flattened portion of the drawbar to pass under between transom and center plate, yet we had no trouble whatever with this during the entire time referred to. Might not the equipment of light cars, with continuous drawbars designed upon somewhat similar lines, afford a solution as to handling them without injury in the heavier trains of to-day.

Wetting the Driving Tires.—Now as to the device for keeping water in contact with flanges and tires of locomotives to prevent undue wear on curves and to increase adhesion:

About 1871 the Pennsylvania Railroad attached just such a device to their engine, No. 87, Class D, 18-in. x 22-in. cylinders, six 54-in. drivers, and in freight service. The end of each pipe on the 87 was fitted with a fan-shaped piece about 3 in. across and of almost microscopic width only. It was placed close to the flange, and but a slight distance above the rail. Two sets were used—one set in front of the forward drivers and the other set behind the rear drivers.

The primary object was to obtain adhesion without the use of sand. This result was satisfactorily obtained in the case of 87, but the train passing over seemed to mingle its own dust and the wear of the wheels, with the moisture into a slippery paste which caused much annoyance to trains following, and the contrivance was soon removed. Had the other engines been similarly equipped the result might have been different. I do not think any effort was made while it remained on the 87 to ascertain its value as a preventive of flange-cutting on the sharp curves of the Pittsburgh Division, where 87 was in service.

Personally, I would rejoice to see something successfully adopted which would either remove the sand-boxes from the boiler's top to a place under the running board, or eliminate them entirely. Our American engines are disfigured by too many such things on the boilers, and our Continental brethren seem to keep their engines in line with us in this respect, even neglecting to design such excrescences with any regard to beauty, but oftener make them of patterns which would disgrace an ordinary cooking utensil. The finished appearance of the British locomotive is unquestionably owing in a large degree to the absence of sand-boxes, etc., from the boiler top and their occupying a "retired" position either on, under, or between the foot-plates.

The Pennsylvania R. R. Co., during 1861 and 1862, placed the sand-boxes of engines 16, 55, 57, 59, 86, 70 and 106 under the running boards and behind a neat type of wheel cover; but found trouble from the sand dampening and then hardening in the boxes; so that by 1866 all these sand-boxes were replaced on the tops of the boilers.

Again, in 1881, the company adopted the position of sand-boxes placed under the running boards and behind the wheel cover as a standard for passenger engines and maintained it for over 12 years, building several hundred engines so arranged and placing them in service, both on the main line and on the leased lines.

The old trouble, however, of caked sand and consequent delay of trains soon came to the front. Different shapes and sizes of boxes were tried, and finally an arrangement whereby the exhaust steam of the air pump was utilized to keep the boxes dry and warm, but in 1893 the boxes began again to be placed upon the boiler top as rapidly as engines were built or repaired, and now all are there, except on No. 1515, Class T, Altoona compound. This engine is of rather peculiar design and finished closely on English lines. Hence it seems to be permitted to retain the English type of sand-box.

Quite recently the Class E1 and E2 passenger engines of the P. R. R. have been built with sand-box close to front of dome and the whole covered by one oblong casing. One of the Class L (now D) type has recently been similarly arranged in receiving general repairs, but while this reduces the number of parts visible on the boiler, the oblong casing is not exactly a "thing of beauty," and too closely borders on the many unshapely designs of Continental locomotive builders.

C. H. CARUTHERS

Locomotive Tests for Students' Theses.

Through the kindness of officers of the Boston & Albany Railroad Messrs. M. C. Brush and W. F. Davidson, senior students of the Massachusetts Institute of Technology, in mechanical engineering, have been able to make for their thesis work a series of road tests on locomotive No. 221, which hauls the passenger train that leaves Albany at 9:10 a. m. daily to Springfield, and returns to Albany with the 4:30 p. m. train. The distance between the two places is 102 miles, the duration of each run being about three hours, inasmuch as the grades are steep. The locomotive tested is a ten-wheel, two-cylinder compound, and the following are a few of its general dimensions:

Type	Two cylinder compound
Builder	Schenectady Locomotive Works
Weight on drivers	114,000 lbs.
Weight on truck wheels	44,000 lbs.
Total weight	158,000 lbs.
Wheel base, total	26 ft. 2 in.
Wheel base, driving	15 ft.
Diameter of drivers	69 inches
Diameter of truck wheels	33 inches
Diameter high pressure cylinder	22 inches
Diameter low pressure cylinder	34 inches
Stroke	26 inches
Boiler (diameter of barrel)	62 inches
Working pressure	215 lbs.
Grate area	30 sq. ft.

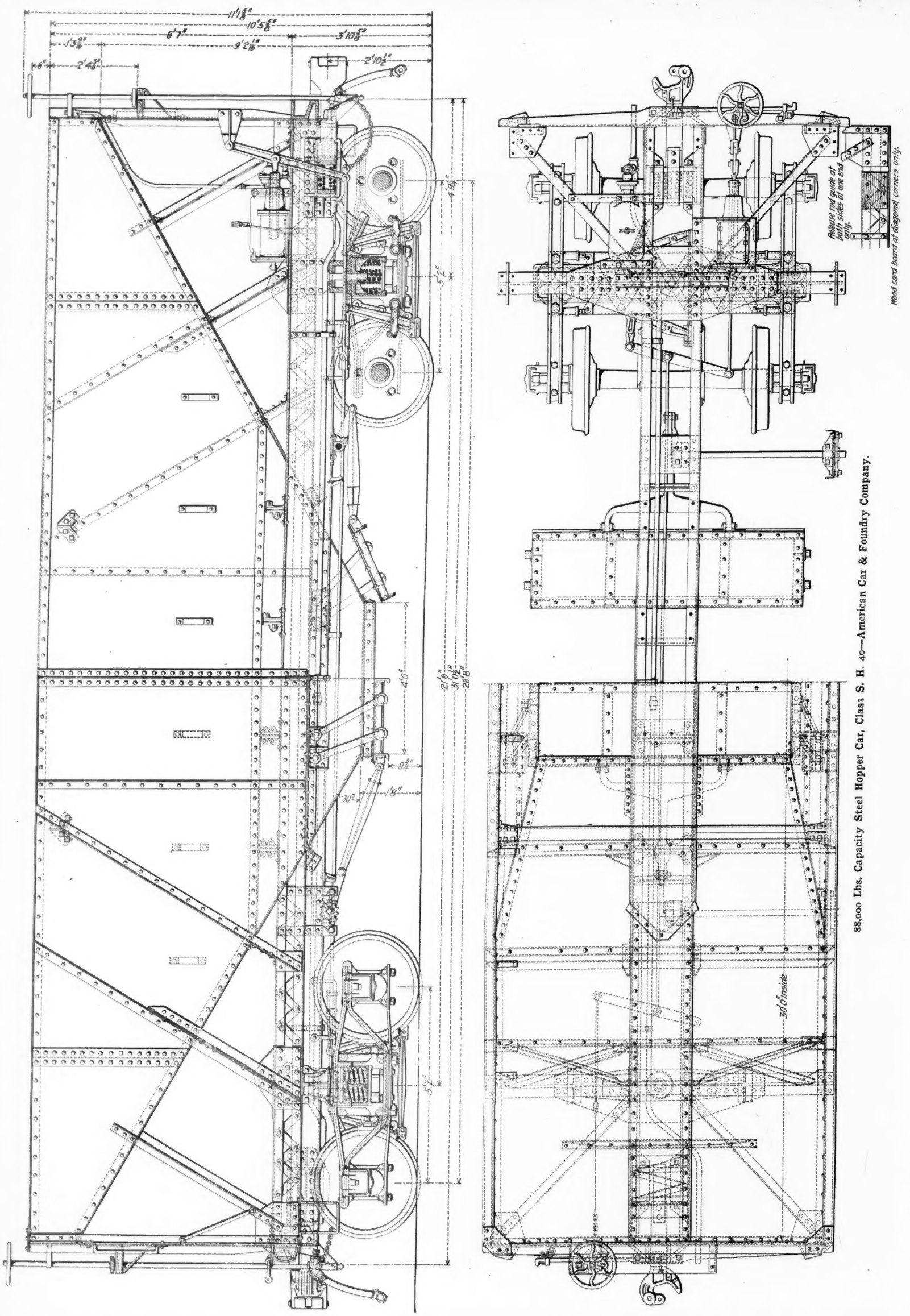
Engine tests were made only on the runs from Albany to Springfield, but boiler tests were made including the round trip. Account was taken not only of the coal and water used on the run, but also of that used while the engine was lying off. The weighing of the coal was done by the usual methods, and the water consumption was determined by the use of a pair of 2-in. disc meters coupled together, inasmuch as the amount of water required at times was large. Care had to be taken to so arrange the connections between the tank and the meter, on the one hand, and those between the meter and the inspirator, on the other, as to offer as little resistance as possible to be overcome by the inspirator. For the determination of the power four indicators were used, so that simultaneous cards were taken from each end of each cylinder, usually at an interval of three minutes while steam was being used, but oftener when circumstances required. The piping for the indicators was made of ¾-in. copper pipe, the attempt being made (1) to have the pipes as short as possible, (2) to have them as smooth as possible on the inside, (3) to avoid, as far as possible, the resistances due to fittings and to substitute as far as could be done smooth bends in place of fittings. An instrument was used for the purpose of obtaining valve ellipses drawn by the locomotive itself during the run, and a considerable number of such valve ellipses were obtained. For speed determinations three methods were used, viz., 1st, observing the times of passing the mile posts; 2d, reading the revolution counters, and 3d, using the Boyer speed recorder.

Such supervision as was necessary was exercised by Mr. C. E. Fuller, one of the instructors in the mechanical engineering laboratory. Four complete road tests were obtained, and all the data taken, but the calculations are still to be made.

Twenty road tests of locomotives have been made by students of the Massachusetts Institute of Technology for thesis work, the work described above forming the third thesis of this kind that has been performed on the Boston & Albany Railroad, the first of the three by Messrs. H. A. Campbell and B. S. Hinckley, of the class of 1899, and the second by Messrs. P. R. Brooks and E. G. Allen, of the class of 1900.

A Defect of the New M. C. B. Journal Boxes.

In a recent discussion of hot boxes on cars, Mr. Max Toltz, of the Great Northern, called attention to a feature of the latest M. C. B. standard journal boxes, for 5 x 9-in. and 5½ x 10-in. journals, which had given trouble. Heating was found to be due to the waste shifting on account of the bottoms of these larger boxes being semi-circular. The M. C. B. standard journal boxes for the small sizes of axles have rectangular bottoms, and the waste appears to be held in place in these boxes. Mr. Toltz said: "I would like to call your attention to another cause for hot boxes which has not been mentioned. Only recently railroads here in the Northwest have received cars of 80,000 and 100,000 lbs. capacity, under which 5 x 9-in. journals and 5½ x 10-in. journals, respectively, are used. I refer especially to 5 x 9-in. journals. The cause for hot boxes on these was found in the construction of the box proper, which, although made according to the M. C. B. standard, has semi-circular bottom. The waste in these boxes is thrown from one side to the other in the direction of the revolution of the axles, thereby cutting off the lubrication of the journal on one side entirely and partly on the bottom. I have had occasion to look into this trouble on a train consisting of three heavy cars, and although the boxes were packed properly, and this packing continued almost every 15 miles, hot boxes were had just the same. The only remedy that could be applied was to put in teats in the bottom of the boxes to hold the waste in place or to put in new boxes with square bottoms."



88,000 Lbs. Capacity Steel Hopper Car, Class S. H. 40—American Car & Foundry Company.

Structural Steel Hopper-Bottom Car of the American Car & Foundry Company.

In our issue of Oct. 5, last, the archbar truck used by the American Car & Foundry Company was illustrated in connection with a discussion of truck design by Mr. George I. King. Oct. 26, we published comparative data concerning the weights and capacities of different types of hopper-bottom cars in which reference was made to the new structural steel cars of the American Car & Foundry Company, and Jan. 4, we published the drawings of its 50-ton steel gondolas. Now we give drawings of one class of its steel hopper-bottom coal cars which was also designed by Mr. King. Taken altogether it makes a fairly good record of the steel car work so far done by that company.

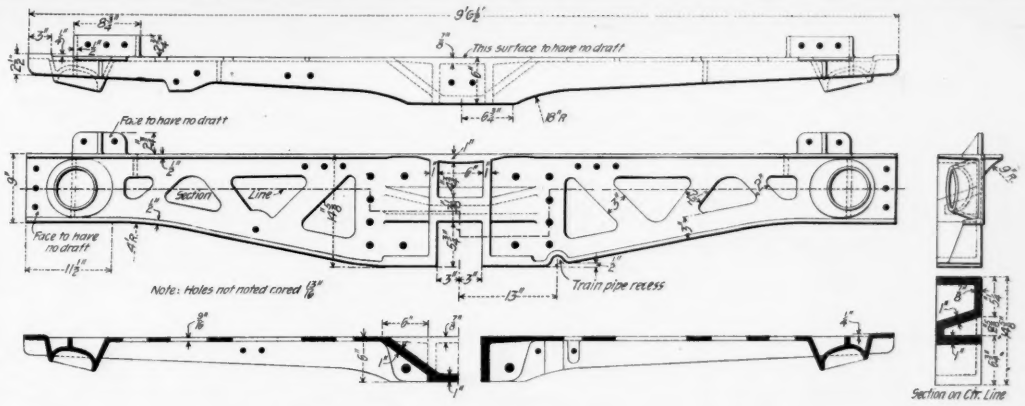
The car now illustrated is known as the S. H.-40, and has a maximum capacity for 88,000 lbs. of coal. The light weight is approximately 34,600 lbs. The inside dimensions at the top are 30 ft. long and 9 ft. wide, and from the top of the sides to the rail is 10 ft. 5⅝ in. The discharge openings at the bottom are on either side of the center sills, each opening being 4 ft. long and 2 ft. 6⅞ in. wide. The construction is so clearly shown by the drawings that only the special features will be referred to.

The center sills are two deep channels placed with the flanges facing inward. The side sills are girders consisting of two flange angles which, near the middle of the car, are riveted to the side plates, thus forming the web of the girder. Beyond the side plates, at either end, the angles are connected by lacing.

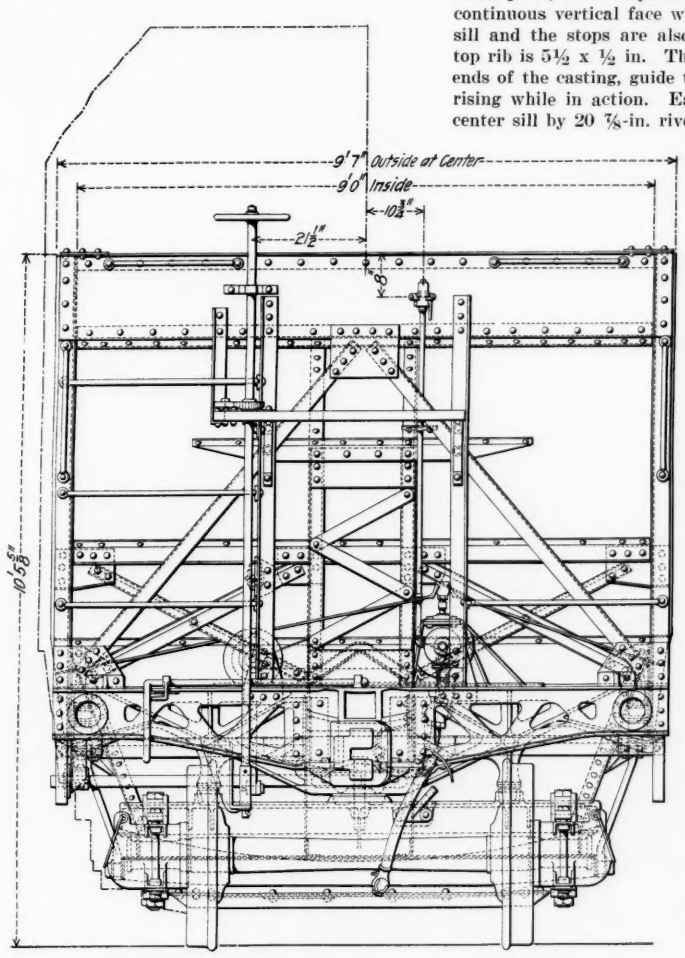
The end sills are open-hearth steel castings, as shown in detail, and are considered an advance over previous constructions. They weigh 869 lbs. per car and are considered able to stand more buffing than any plate arrangement that can be designed, materially assisting the draft attachments in this way. The draft lugs are also cast-steel and are formed so as to enclose the ends of the follower plates. The M. C. B. yoke is used, preferably with two followers 6 x 1½ x 14 in. and two standard draft springs 6¼ x 8 in., each spring having a coil of 1¼ in. and one of ¾-in. diam. steel. By reference to the drawings of the draft lugs it will be seen that, instead of having the usual front and back parts connected by a third piece, both stops are cast together. This gives a continuous vertical face where the lug is attached to the sill and the stops are also connected by two ribs. The top rib is 5½ x ½ in. The ribs act as ties to unite both ends of the casting, guide the followers and prevent their rising while in action. Each draft lug is riveted to the center sill by 20 ⅞-in. rivets, so there are in all, holding the four lugs to the car, 80 rivets, the strength of which at 12,000 lbs. per sq. in. is about 578,000 lbs. Since shearing values govern the strength of this connection, the only weak point of the gear is in the spring capacity. This is as great as in similar spring gears and when used with the cast steel end sills, it is thought to be sufficient This design of end sill and draft attachments very much reduces the number of parts and simplifies the end construction.

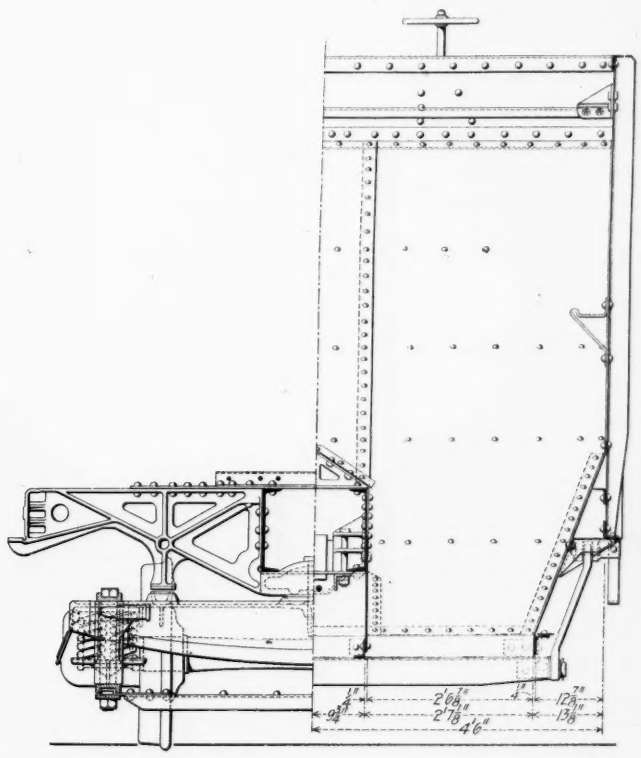
As shown, the body bolsters are designed to fit the center sills at the sides and pass beneath them. The upper center plates and side bearings are cast with the bolsters. The body bolsters are connected to the sills by rivets through the webs and also by wide cover plates above.

The doors extend across the car and each covers two openings. The method of hanging the doors and the arrangement of the operating mechanism are clearly shown by the drawings and it will be noted that in discharging a load the doors are swung back clear of the opening and out of the way of falling material. When open the doors do not hang lower than the axles so they are not liable to be damaged if the cars are run with the doors in the open position. The trucks are of the diamond frame type with the archbars of special rolled section. The design of this truck was fully described Oct. 5 last.

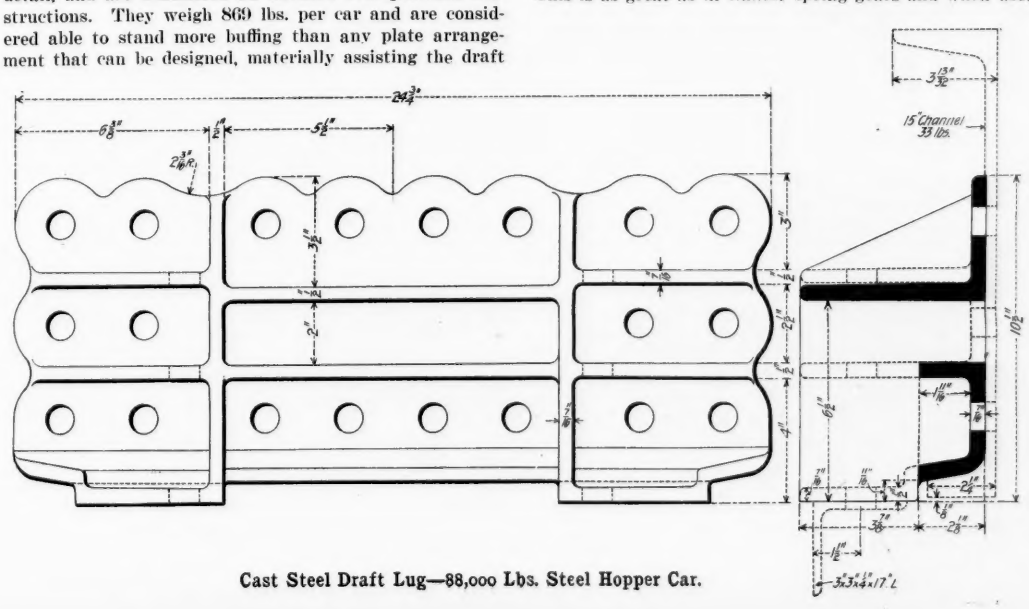

This surface to have no draft
Face to have no draft
Section Line
Face to have no draft
Note: Holes not noted cored 13/16"
Train pipe recess
Section on Ctr. Line

Cast Steel End Sill—88,000 Lbs. Steel Hopper Car.





End Elevation and Sections—88,000 Lbs. Capacity Steel Hopper Car.



Cast Steel Draft Lug—88,000 Lbs. Steel Hopper Car.

The Accident at Offenbach, Germany.

A good deal has been said in the papers, here and abroad, about the fatal railroad accident at Offenbach, where several people were burned to death. Now we are able to give an official translation of a part of the report of the officers of the Prussian State Railroad Administration. We leave the text as it comes to use, cutting out a few irrelevant sentences.

Extract from the official report of the Prussian State Railroad Administration regarding the railroad accident near Offenbach.

Thorough investigations, which the Administration has been making in the matter of the railroad accident near Offenbach, which has created so much excitement in public on account of its terrible consequences and of the reflections on the safety of traveling on railroads, have now come to a certain conclusion. It appears to be a necessity to publish the results of this investigation, so much the more, as on the basis of information given by some passengers of the unfortunate D-train and of other witnesses, and on the ground of some preliminary official informations, the various daily papers contained descriptions of the occurrence and its consequences, which it is

quite conceivable, do not correspond with the facts now ascertained by the official investigation.

The locomotive of the passenger train run into the last carriage of the D-train, pushing the latter forward by the length of a coach, crushing the back wall, losing its chimney entirely, cleaving the floor and shoving it forward, crushing entirely the water closet and two compartments, while in the next two compartments the seats and partitions were telescoped. The last two first class compartments situated towards the front of the carriage, seem to have remained intact. At the same time the bogie frame of the carriage bearing the hind axletrees was caught by the locomotive, torn off from the floor and pushed forward by 4 meters; the bogie frame was run against the two gas receivers, which had a length of about 4½ meters, pulled them out of their fastenings and throwing them about, so that they were lying under the carriage in a slant direction. A hole was knocked into the front of one of the receivers by the sharp edge of the bogie frame, from which the gas escaped in the very shortest time under a pression of about 5 atmospheres.

The locomotive was standing on its wheels upon the track until the supporting board, between the somewhat lifted and back-bent walls of the carriage; above the locomotive was the roof of the carriage which was partly split by the steam dome of the boiler. The fragments of the floor of the partitions and of the sitting arrangements, i. e., wood splints, stuff of furnitures, carpets of cocoanut fiber, wainscot, wax cloth and cork carpets must have been heaped up before, aside and above the fore part of the boiler. The gases of the fire, heated to 600 or 700 degrees coming from the chimney hole of the smoke-box flowing into that confused mass, thus filling soon the space with glowing vapors, set on fire everything burnable. Into this hearth, which must have been formed inside the carriage immediately after the collision, gas was flowing from the receivers below (perhaps also from the crushed locomotive lamps, the receivers for these lamps being placed behind the tender) a crack, and a big flame was formed, which seemed to pass through the carriage and soon to extinguish, while the fire inside was extending, so that after a few minutes the flames burst forth from the roof, the sides and the open crushed windows.

It may be supposed that the crack was heard soon after the collision, while the full conflagration burst forth about 4 or 5 minutes afterwards; for in the meantime some officers of the train had been able to approach the carriage closely to make attempts at saving, the flames not yet hindering them from doing so, and passengers of the last carriage, who were not pressed to death, or suffocated by the glowing smoke gases, or prevented from moving on account of being squeezed in, or seriously hurt, had been able to save themselves.

The gas receivers were intact with the exception of the hole pushed in and the torn-off pipes, consequently an explosion of the receivers did not take place; but it is probable that one part of the escaping gas got mixed inside the carriage with the smoke gases and atmospherical air and caught fire at the existing hearth.

There is no doubt, that the passengers in the four crushed back compartments of the last carriage, if they were not killed immediately they were suffocated within the very shortest time. Attempts made to save passengers from outside through the windows failed, because they were squeezed in between the seats; these attempts were made with the third and fourth compartment. The last but one carriage had yet received only a little shock, its passengers could all reach the open air. . . . Only 15 or 20 minutes after the collision this carriage was set on fire by the other carriage, and only some hours later, when the carriage was burnt down, one receiver which had become red hot, burst open and the escaping gas burned away within a moment. . . .

It has been mentioned already that the gas-lighting has not caused the burning of the carriage directly, but that it may only have contributed to it. Also in the case of the railway accident Wannsee in 1887 the burning of one carriage could not be imputed exclusively to the gas. Otherwise there are only very few cases remaining, in which the cause of the burning connected with railroad accidents was more or less imputed to the gas lighting. If we consider that at present about 105,000 railroad carriages fitted up with gas lighting are running in all parts of the globe, and that this system of lighting was introduced in Germany already 30 years ago, it cannot be asserted on account of the few accidents which occurred, that the gas lighting be more dangerous than any other system of lighting, even if in some cases it had been the cause of fire. But if at present a stress is being laid again and again upon the dangerousness of the gas lighting, this is not right, and it is in contradiction with the facts. As a substitute for gas lighting the electric lighting is pointed out and it is said to be now sufficiently tried and safe from fire. It can scarcely be admitted, that electric installations themselves are more secure against fire than gas installations, if we consider that even in course of the last years perhaps more buildings have been destroyed by fire on account of defects in the electric installations than houses have been destroyed on account of defects in gas installations. Nor can it be admitted, that an electric lighting arrangement in a carriage should be more secure against fire than in a building, because it is much more difficult to apply all the arrangements in a carriage, the latter being continually exposed to motions and shocks while traveling. It is well known that a certain number of street cars burnt down on account of short circuit and of other defects in connection with electric arrangements. But an electric circuit of higher tension having been used in these cases, it is not intended to infer unfavorably from this; at all events, before speaking with such certainty of the safety of electric train lighting, as it is being done now it ought to be proved by continued experience, that it is safe from fire. . . .

How the great railroad administrations of all the countries think about this, appears clearly from the fact, that still in the year 1888 only about 26,000 carriages were fitted up with gas lighting (mostly in Germany) while at present about 105,000 carriages are running with gas lighting on Pintsch's System only. . . .

The whole question has been discussed thoroughly in the meeting of the Electrotechnical Society, held at Berlin on the 27th of November last, and it was ascertained there, that however desirable it may be to make a more extensive trial with electric lighting on the Prussian State Railways for the purpose of making their own experiences as to its being to the purpose, it was, however, admitted that for the present a general introduction of the electric light is out of question and that in consideration of the experiences made with gas lighting the dangerousness of it is also out of question.

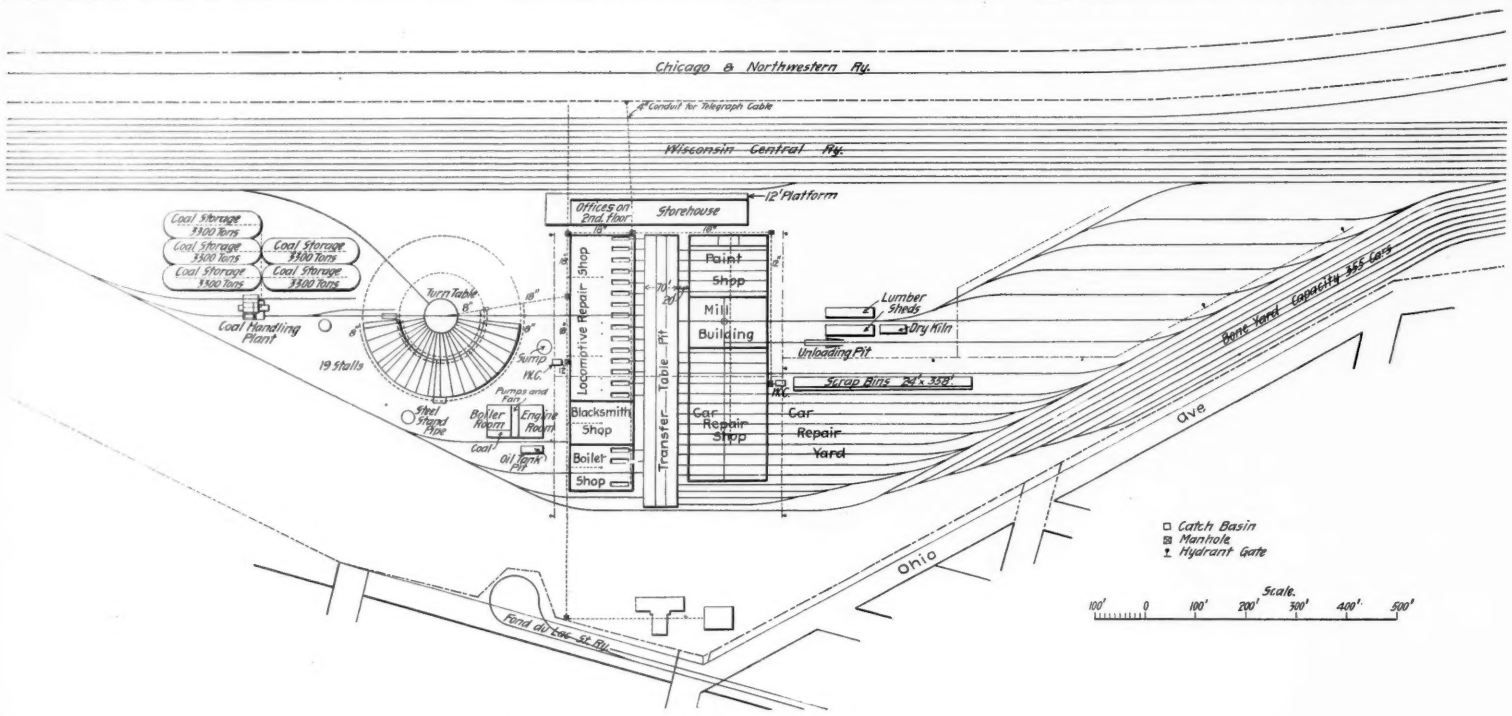
It was stated on this occasion that the fitting up of the trains of the Prussian State Railways with electric light would cause an expenditure of 35 or 40 millions, apart from the fact, that the existing gas fittings which should have to be laid aside, represent a value of about 15 millions and for which a lighting system would be taken in exchange, which does not offer more but less, and which is not cheaper than the existing lighting system, but which, with the present state of technic, would present almost insurmountable difficulties for the service of working. . . . After all this the reproaches, which the Prussian State Railroad Administration was taxed with, for not having adopted the electric train lighting long ago, and for having thus caused themselves the railroad accident near Offenbach, will fall to the ground just as well as the demand to adopt immediately the electric lighting system, if they do not want to reproach themselves with badly neglecting the interest of the public. Such reproaches and demands serve only for alarming the public and for spreading erroneous views. . . .

To conclude we wish to mention yet that all the questions referred to above will soon be discussed thoroughly again in the Imperial railroad office between the Governments of the German Confederation at the request of the Reichs-Kanzler.

New Repair Shops of the Wisconsin Central Railway at Fond du Lac.

New repair shops have been built by the Wisconsin Central at Fond du Lac, Wis., which are modern in their design and equipment. These shops are intended to provide facilities for making the heavy repairs of all the locomotives and cars of the road, where formerly this work was divided and done in two shops. The locomotive repair shop was at Waukesha, and has not been abandoned, and the car shop at Stevens Point will be closed as soon as the tools are in place in the new Fond du Lac car shop. This road has about 900 miles of track and an equipment of about 150 locomotives and nearly 10,000 cars. The new shop buildings are all of light brick with steel roof trusses and posts, and present a fine appearance. In addition to side windows, there are numerous skylights and windows in the roof, so that in the daytime the shops are very light.

The arrangement of the shops is shown by the general plan. It will be seen that this provides for transverse shop tracks which are served by a transfer table. The



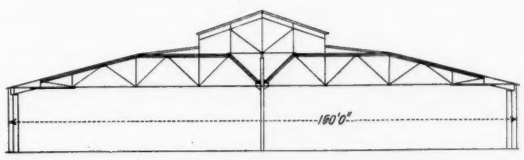
Plan of the Fond du Lac Shops—Wisconsin Central Railway.

car shops are on one side of the transfer table and next the car repair yard. The locomotive repair shops are opposite and the store house is at the head of the transfer table and convenient to both car and locomotive shops. The roundhouse, coaling station, and clinker pits are beyond the locomotive shops. As all the shops are electrically driven, the buildings are arranged with no special reference to the powerhouse.

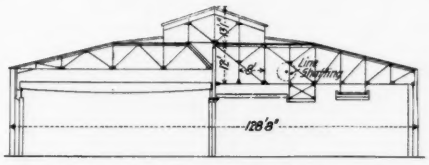
A plan of the locomotive shop showing the approximate arrangement of the tools is given as well as a cross-section, from which can be seen the arrangement of roof trusses and crane supports. This building is a little over 500 ft. long x 128 ft. wide and the plan permits of enlargements. Thus, if ever required, the machine or erecting shop can be increased from 15 pits to 23 pits by putting up an extension for blacksmith and boiler shops, and using the present blacksmith and boiler shops for erecting and machine work. The car shops opposite can, of course, be extended in the same direction.

At present there are 15 pits in the erecting shop and three in the boiler shop, all pits being on the side next the transfer table. A shop track extends the entire length of this building and a similar track connects the machine shop and roundhouse. Other means for handling material are cranes and hoists. The pits in the erecting shop are served by two 30-ton overhead traveling cranes driven by ropes, these cranes having been brought from the Waukesha shops. One track for this crane is carried on posts along the wall and one track on a row of posts at the center of the buildings. The design of the roof trusses above these cranes is so modified as to give about 4 ft. greater headroom which is sufficient for the uses to which these cranes are put; chiefly raising engines for removing the wheels and lifting large parts into place. The transfer table is depended on for bringing materials close to the point where they are to be used. On the opposite side of the center posts are two 5-ton overhead traveling cranes which it will be seen are located to serve the heaviest

tools. One track for these cranes is carried by the center posts and one track is supported by the roof trusses. Beyond, and serving the light tools and benches, are four 2-ton lifts which can be moved along an overhead track suspended from the roof trusses. In addition to these cranes running on longitudinal tracks, all the large machines are served by air hoists for lifting the work in and out of the machine.



Section Through Car Repair Shop.



Section Through Locomotive Repair Shop.

In the machine shop there is one main line shaft which extends through the roof trusses for the full length of the machine shop, being divided into three lengths. Each section of the main shaft is driven by a 40 h.p. motor mounted on a platform built in the roof truss, and a 10 h.p. motor drives a short shaft above the tool room, this tool room motor also being mounted above. Countershafts are carried below the roof trusses by hangers. In addition to this electrical equipment there are two 30 h.p. motors in the locomotive shop, mounted on the roof trusses, which drive the fan of the Sturtevant hot air heater used in that building. Also there are two 20 h.p. motors, mounted above, which are belted to air compressors on the floor. A compressor is located at either end of the building, both delivering air into a common system of piping and reservoirs. The air reservoirs are located above and carried by the roof trusses. The motors driving air compressors are regulated automatically. When the air pressure falls below the point for which the regulator is set, a contact is closed which admits current to the motors. When the pressure is raised above the desired point, contact is broken through a mechanism worked by a small air cylinder and a regulating spring. This regulating device has a range of working of about 2 lbs. It will be understood that while the electric motors are carried by the roof trusses, all the switches and controlling apparatus are on the nearest wall and the usual distance from the floor. In grouping the machinery, the idea has been to concentrate the heavy machine work under the larger cranes, to bring the wheel and axle work together and to place the lighter machines near the benches. About the only thing which interferes with placing machines at any point in the shop is the fact that the location must be such that the roof trusses will not interfere with the necessary pulleys and belts. None of the machine tools in this shop have individual motors.

About the only points of interest not shown by the plan of the blacksmith shop are the electric drives and the manner of carrying off the smoke from the fires. This shop has one 15 h.p. motor, mounted above on the roof trusses, which drives a line shaft, from which in turn the tools in this shop are driven. Another 15 h.p. motor drives the fan which supplies the blast for the forges, both fan and motor being mounted in the roof trusses. The air is carried down through two mains alongside the wall and thence through underground branch pipes to the several forges. Above each fire is a large pipe ending in a hood, which rises straight up from the forge; these smokepipes are then turned and run into chimneys. There are three chimneys for the whole shop and natural draft is depended on for carrying off the smoke.

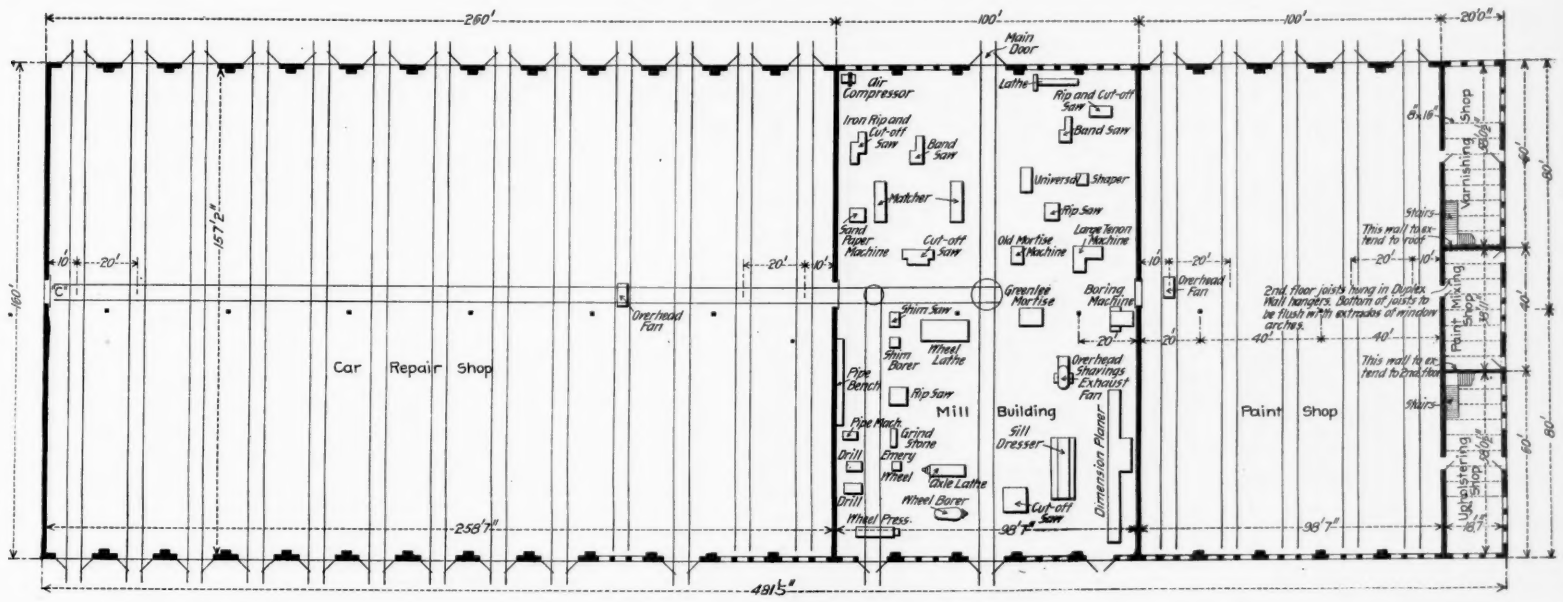
The boiler shop has three pits, and one cross track which connects this shop with the adjacent yard tracks, independent of the transfer table. The tools in this shop are driven from one line of shafting which, in turn, is driven by one 20 h.p. motor. The tools in the car shop when installed will be driven by one 15 h.p. motor and the fan of the hot air heating apparatus by one 40 h.p. motor, all mounted above as in the other shops. The transfer table is 70 ft. long and has a capacity for 200 tons of load. It is driven by one 50 h.p. motor and can be moved at a speed of about 5 miles an hour.

There are 19 pits in the roundhouse with a considerable enlargement possible. The turntable is 70 ft. in diam. with center bearing only, and this table will be driven by a motor. At present the coal handling plant shown on the general plan has not been installed, but it is proposed to substitute a modern plant with mechanical conveyors for the temporary coal wharf now being used. The machinery at this proposed plant will be electrically driven and there will be large storage bins reached by conveyors.

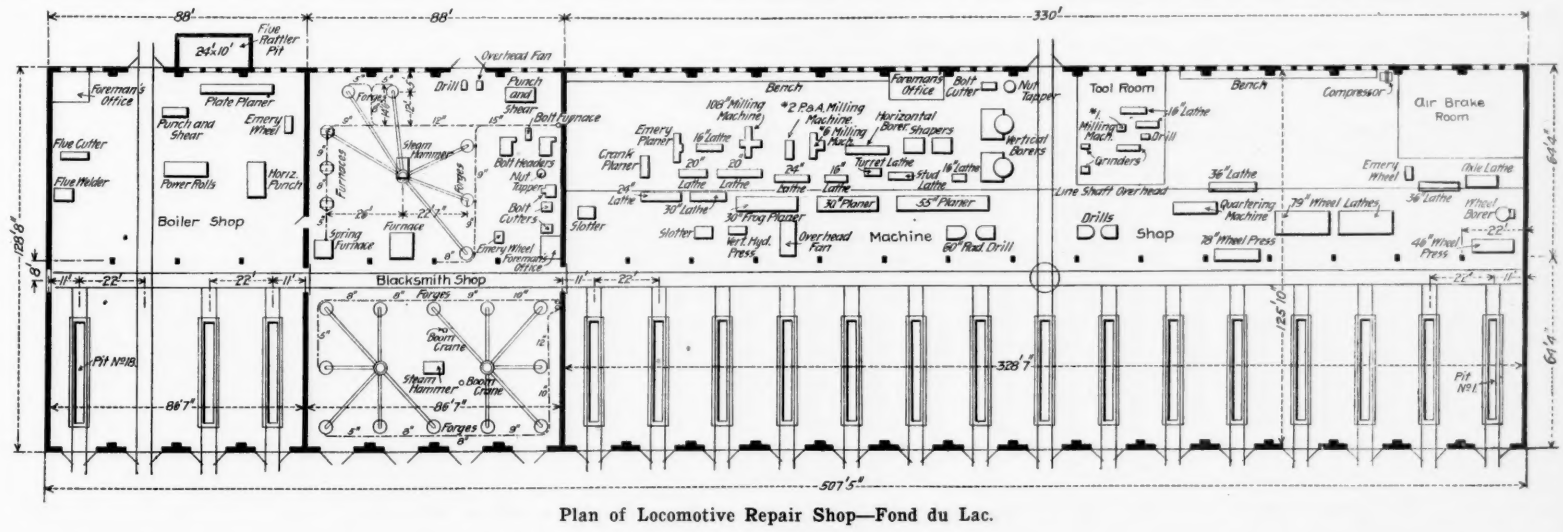
One end of the storehouse is three stories and the upper floors are used for offices. The foundations of this building are so proportioned that additional floors can be added if in the future more office space is required.

In the power house, which furnishes current for power and lighting purposes for the whole plant, there is one 16 x 42-in. and one 24 x 42-in. Allis condensing engine. The smaller engine is belted to a 100-k.w. generator, while the larger engine drives, by two belts, two 100-k.w. generators. The generators and motors throughout the plant were furnished by the Milwaukee Electric Co. The boiler plant consists of three 72-in. x 18-ft. cylindrical boilers and there is room for a fourth unit. These were furnished by the Milwaukee Boiler Co. In addition to the pumps for boiler feeding there is a large fire pump. The water for the plant is stored in a large steel standpipe shown on the plan. The American Blower Co.'s system of forced draft is used and the stack is but 20 ft. above the roof.

By referring to the plan it will be seen that there is a "locker" house near the shop gate, and in this house the workmen change their clothes before they receive checks. Lockers are here provided for storing clothes, and such things as workmen usually carry with them into the shops and put in out of the way places. Also this building is fitted with large lavatories for the men. In this way when the men get their checks and go into the shop buildings they are ready to begin work, and in the same way they are obliged to change their clothing after their checks are delivered up. The most important feature, however, is that fire risks are lessened by keeping lockers and surplus clothing out of the shop buildings.



Plan of Car Repair Shop—Fond du Lac.



Plan of Locomotive Repair Shop—Fond du Lac.

We are indebted to Mr. R. B. Tweedy, Chief Engineer of the Wisconsin Central for drawing and to Mr. F. C. Cleaver, Superintendent of Motive Power, and Mr. R. R. Bradley, Mechanical Engineer, for information and other courtesies extended while visiting these shops.

Travel Notes of a Colonial Commissioner.

Mr. Charles Oliver, the Chief Railway Commissioner of New South Wales, lately returned to Sydney after a tour through the United States and parts of England and the Continent. In an interview he said:

"I spent about three and a half months in England, something under four weeks in America, and six weeks on the Continent. In America I met a number of prominent railway men, and saw much of the railways, the

principal railway termini and other stations, the rolling stock, and track.

"There are some luxurious sleeping car trains, in which spacious accommodation is provided, but to accomplish this the weight of the cars has been considerably increased and the carrying capacity diminished. For example, the sleeping cars weighing up to 65 tons (about 53½ tons English) carry fewer passengers than cars weighing 35½ tons. Such heavy cars with reduced carrying capacity could not be profitably used on our lines under existing conditions. There are also very comfortable chair cars, but here again increased weight is to be found with decreased carrying capacity. . . . Generally the New South Wales carriage stock compares very favorably with that of America. The dining arrangements in connection with the Pullman trains are, as a rule, good.

"The system of checking passengers' luggage is most complete, but the checking of tickets en route is very trying; it is frequently done in connection with the Pullman car tickets, and the ordinary railway tickets by officials representing each interest. The goods traffic is conducted under conditions differing considerably from ours, and invariably full loading for the trucks, which are generally of a carrying capacity of not less than 30 tons, is obtainable. On the American lines no concession for loading of less than 12 tons is made, and in many instances the minimum weight in connection with which concessions are made is limited to 15 tons. With us special concessions are made for six ton loads, and our average loading is less. This regular flow of full loading is the secret of the lower goods rates which prevail in America.

"I devoted special attention to the wheat traffic and the system of elevators. . . . The question of the introduction in New South Wales of elevators for dealing with wheat in bulk, requires much consideration, as it would involve a complete change in the present methods of handling wheat. Local elevators would require to be erected in convenient positions adjacent to the railway line throughout the agricultural districts of the colony, and it would be necessary for the Railway Commissioners to make the existing railway trucks suitable for carrying wheat in bulk, or to build special wagons for the purpose. For dealing with export wheat a central elevator sufficiently extensive to meet probable requirements would have to be erected in a position suitable for loading into properly fitted ships. If the wheat for milling purposes or home consumption is to be dealt with in bulk all the millers would require to provide themselves with elevators. It is sometimes alleged that because America conducts its wheat traffic in a certain way we should follow it. This, however, is not a sound argument, as the circumstances of the two countries are dissimilar, and the volume of traffic incomparable. Every detail must be studied and the fullest inquiry made as to whether bulk carriage is adapted to our circumstances, and would prove less expensive than the present system. From the American wheat fields on the Pacific coast the produce is entirely dealt with in bags. If a proper system of grading the wheat were introduced, there is no reason why our wheat should not continue to be dealt with in bags, at least until such time as the suitability of the elevator system to our circumstances is fully assured, and the probable extent of our export trade demonstrated.

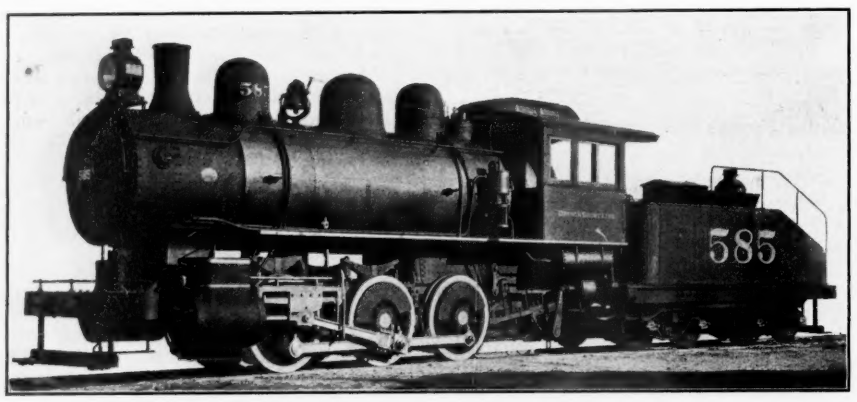
"While in America I arranged for the supply of the electrical appliances, machinery, etc., required for the extension of the Ultimo powerhouse. Roughly, the new machinery will double the generating power at Ultimo, which from being 5,000 h.p. will become 10,000 h.p. That will meet all contemplated demands.

"In view of the creation of an Interstate Commission in connection with the federation of the colonies, so near at hand, I studied the operations of the Board of Trade in England, and of the Interstates Railway Commission of the United States as affecting the working of the railways, but not being aware of the powers which may be vested in the Interstates Commission of Federated Australia, I cannot make any comparison with what exists at the present time in England and the United States of America. The United States Commission seemed to me to be purely advisory in its capacity, without power of enforcing its determination.

"During my travels I thought much of the question of our mixed gages, and am fully convinced that no further time should be lost in taking action on the report made some while ago by the Commissioners of Victoria and South Australia and myself, with a view to unification at no distant date."

Cooke Six-Wheel Switching Locomotives—Oregon Short Line.

The Cooke Locomotive & Machine Co. recently built for the Oregon Short Line five six-wheel switching locomotives of unusual weight and power. The cylinders are 21 in. x 26 in., and the weight on drivers 137,300 lbs. A half-tone illustration shown herewith gives a very good idea of the appearance of these locomotives and the general description follows:



Heavy Six-Wheel Locomotive—Oregon Short Line.

General Description.

Type	Six-wheel switching
Name of builder	Cooke Locomotive & Machine Co.
Name of operating road	Oregon Short Line
Gage	4 ft. 8½ in.
Simple or compound	Simple
Weight on drivers	137,300 lbs.
" tender loaded	77,700 lbs.
Wheel base, total, of engine	11 ft.
" " total (engine and tender)	41 ft. 6⅝ in.
Heating surface, fire-box	160 sq. ft.
" " tubes	1,588.88 sq. ft.
" " total	1,748.88 sq. ft.
Grate area	31.9 sq. ft.
Drivers, diameter over tires	51 in.
Journals, driving axle, size	8½ in. diam. x 12 in.
Cylinders, diameter	21 in.
Piston, stroke	26 in.
Steam ports, length	18 in.
" " width	1¾ in.
Exhaust ports, length	18 in.
" " width	3 in.
Boiler, working steam pressure	180 lbs.
Valves	Richardson, balanced
" greatest travel	5¾ in.
" outside lap	⅞ in.
" inside	Line and line
Fire-box, length	9 ft. 4 in.
" width	3 ft. 5 in.

The Timber of the Philippines.

No other country traversed by your correspondent has such immense forests of the best hard woods as the Philippines. There are said to be about 300 varieties, practically all of which are fit for car building, poles and ties and general street car work. The preparations in progress for starting electric lines in Manila and other cities of the islands are planned with a view of using the high grade woods of the islands. Saw mills are required here more than anything else in the manufacturing line at the present time. There have been some saw mills put in operation near Manila, and preparations are in progress for opening some in the vicinity of Iloilo. The mills already in operation are kept running day and night with three gangs of natives, and the proprietors are all making money; but these mills lack modern machinery. Just as soon as some first class lumber working establishments are opened on the rivers in the vicinity of the leading towns or cities of the islands, there will be great advancement made in the industries requiring the use of woods. Several syndicates and a number of private firms and individuals are making plans to operate roads in promising places. There are a number of the mining companies here who are now hard at work getting rich ores from the mountains. Finding that there is no effective means for the transportation of the ore to the coast, they are building narrow-gage roads for their own use. In several cases the little narrow-gage roads, 10, 20, 30 or more miles long, for private use, have turned out to be profitable, as transportation is poor in all parts of the islands, and outside parties are willing to pay well for the carrying of their wares or farm products to the markets. There are several places on Panay and the southern islands where the owners of mines are making more money from their little railroads than from the mine. They handle the freight of the community and make a good profit.

The rosewood species grow in large quantities on these islands, the diameter of some logs being fully 9 ft. The cost for the native sawyers and the men who handle the cutting tools is only 15 to 20 cents a day, and therefore the cost of getting out the large boards is small.

There are great forests of mahogany, and the wonder is that enterprising men interested in the handling of hard woods have not undertaken to get this wood before. Even now there are practically no operations in progress in the mahogany forests. Some one is going to get rich in the numerous islands as soon as he undertakes to cut and sell this wood or ship it to other ports. The mahogany of the Philippines is noted for the immense size of the trees, some of them being larger in diameter than the rosewood trees. The writer called upon one of the parties interested in the little, frail, one-horse and practically useless narrow-gage freight line running between the mines and the city of Santa Barbara on the island of Panay, and was served with chocolate at a table with a mahogany top 10 ft. in diameter. Mahogany boards were used for the bottom and sides of some of the old cars of the road.

There is a wood grown in the forests here which closely resembles bird's-eye maple. It takes as good a polish as the best of rosewoods, and looks well. This would be good for head linings of cars. It can be had in large quantities in the foot hills of Luzon, Panay and several of the other islands. It seems to have good wearing qualities, and therefore might do for car platforms and floors.

The impression has gained ground in the United States that there are no pine woods here. The probable reason for this is that the numerous hard woods attract most attention, and the soft woods are lost sight of. Your correspondent passed through several valleys on the southern islands in which there were an abundance of pine forests. In some of these pine torches that burned just as they burn in the pine forests of Maine and Georgia were used. One party from South Carolina desired to locate pine forests with a view of working some of these woods later on and shipping the lumber to other ports. They found that there were numerous forests of pine woods in the islands of the southern section of the archipelago.

Another wood appeared to be enough like cherry to be called by the same name. The species of cherry grown here would be suitable for car work. The wood grows chiefly in the rough mountainous sections, and is hard to get at. In making a trip over the hills in order to reach large forests of the cherry-like wood, it was necessary to leave the horse and take to narrow trails that ran along the crest of such narrow ranges that one could look down for thousands of yards on either side. It seemed much like walking from one great hill to another on a tight rope. The native guides led us along these trails, and when we arrived at the forests we were well repaid for the trip. The woods were tested and found to be of a reddish, yellow tinge, close grained and well suited for car trimmings. The trees were mostly of low growth, quite large in diameter for the height, and the bark rough and heavy.

The so-called aranga woods are notable for the great height to which they grow, and in the case of street railroad lines they could be used for poles. Good poles are made by the natives, nearly 100 ft. long and 25 in. in diameter, almost perfectly straight. The wood is hard, and requires considerable labor to work it. But, as suggested above, the labor element does not count for very much. The aranga woods are much used in shipbuilding, as the fiber withstands the attacks of worms and other pests of the kind with which the country abounds.

Acle wood, which does not seem to fit into any particular class, apparently has the power of resisting fire for a greater length of time than one would suppose. This wood is of the hard class, and is used considerably for flooring in houses. When once ignited, the burning is very slow. The wood takes a good finish, and has some of the features of hickory, except that it is much darker in color, but will polish to a fine surface.

The sapan woods are used freely by the dye-wood firms of the country. There are a great many natives employed in the collecting of this wood from the jungle, and nearly all of it is shipped into other countries. It makes a good reddish dye for coloring fiber, yarns and fabrics. The color is rich and fast. The natives load a ship or steamer by floating rafts of the wood to the side of the vessel, and the waters of the sea are colored a deep red by the dye matter that soaks from the wood. This wood would be serviceable for ties.

There is a wood grown here that is so hard that the Americans call it bullet wood for want of a better name. The Filipinos use this wood for nails in house building. The nails are pins about 5 in. long, tapered. This wood, if subjected to the action of a wearing surface, seems to take a hard, iron-like polish that withstands frictional wear. The story goes that the insurgent army have used this wood for bullets.

The owners of the large tobacco plantations on the islands also do quite an extensive trade in box cigars, and many of the proprietors employ gangs of natives to go into the forests to cut and bring into town the cedar-like wood for making cigar boxes. This cedar wood grows about 40 ft. high and from 2 to 3 ft. in diameter. It would be very easy to cut and make this wood salable with the proper equipment of American tools.

The next question to consider is the means of getting at these woods. They grow in forests in nearly all of the islands of the archipelago, and about all one needs to do is to go to any of the capital cities of any of the islands of the group and make known to the United States military commander his intentions to prospect for valuable woods. The commander will provide charts and explain how one or more guides can be obtained. Then it will be necessary to secure transportation. This may be had by hiring a bull cart to carry you over the roads as far as road traffic is possible, and after that it will be necessary to hire horses and go mounted until the rougher ranges are reached, when it may be necessary to go afoot. R.

Since the above letter from Manila was put in type the special report of the Secretary of War has been made public. From it we take a few paragraphs bearing on the railroad and industrial development of the islands.

"The report shows that the islands are estimated to contain about 73,000,000 acres of land, of which less than 5,000,000 are held in private ownership, leaving in public lands over 68,000,000 acres; that this land is for the most part exceedingly fertile, well watered, adapted to the raising of a great variety of useful crops, much of it covered by the most valuable timber, with extensive deposits of gold, of copper, of high-grade iron and of excellent coal; that more than a thousand mining prospectors, chiefly Americans, are already scattered throughout the islands, waiting for the enactment of some law under which they may acquire rights to mining claims covering their discoveries of mineral; that the public lands have never been surveyed, and no facilities have been afforded for the Filipinos to acquire title, and that from 200,000 to 400,000 of the natives are now living as squatters on these lands, waiting for some homestead or settler law under which they may become owners of the land they till, or still other lands; that capital is waiting ready to inaugurate the enterprises which shall develop this vast natural wealth, but there is no authority under which railroads or other means of communication can be constructed to get products of the lands to the markets; that the building of fifty-five miles of railroad already surveyed would throw open to the inhabitants of the islands, as an unsurpassed health resort, the high tableland of Benguet, in northern Luzon, free from tropical vegetation, with forests of pine and with the cool and invigorating climate of the northern temperate zone, but there is no law under which the railroad can be built; that under all its disadvantages business has increased, and the customs received are more than double the amount collected by the Spanish Government from the same source, but that business is hampered and endangered by the scarcity of currency, and there is no law under which currency can be supplied from either public or private source.

"The army has brought the Philippines to the point where they offer a ready and attractive field for investment and enterprise, but to make this possible there must be mining laws, homestead and land laws, general transportation laws, banking and currency laws.

"The great agency to bring industrial activity and awakened enterprise and prosperity and contentment to the country of the Philippines must be not a military government, but the same kind of individual enterprise which has built up our own country. With increased activity of individual enterprise and business will come the greater revenues necessary for the performance of the proper duties of civil government, for harbor improvements and paved and sewered streets and passable highways and adequate schools and effective police."

Couplers for Double-Heading.

At the August meeting of the Southern and Southwestern Railway Club a committee report on this subject was received. In reply to some fifty circulars of inquiry sent out, ten replies and as many blue prints were received. The report follows, somewhat condensed:

None of the makers of automatic couplers for front end of engines or back of tenders, have supplied the wants of the service. As we think it necessary to have a more elastic and flexible coupler than designed by the manufacturers, so arranged that there will be a limited vertical and lateral motion, to prevent the excessive wear of the knuckles and guard arm on couplers, and at the same time admit a freer motion of the engine.

Where double-headers are used there is a constant vertical and lateral motion of the long consolidation engine, which is very noticeable at the coupler. The semi-rigid type of coupler has the tendency to shear the cylinder saddle bolt through the frame, break the front frame casting, wrench the pilot beams, breaking the pilot knees, also breaking the stays and shearing the bolts in coupler attachment, contributing to engine failures, and fraught with great dangers by dropping drawheads on the track, also the excessive friction on the flanges of engine truck, inviting derailment and disaster.

The solid casting for the rear of the tank, used extensively throughout our territory, is entirely too rigid, which invites excessive strains, causing the casting to break in such manner that no repairs can be made, necessitating replacement at too great a cost; where used on engine of long wheel base there is also an element of danger in respect to derailment on curves of over 7 deg.

There exists a preference for the drop or swing coupler, probably to remove the possibility of striking stock, which we do not particularly favor, for the reason that the construction of these couplers is such that to obtain sufficient strength for double-heading makes them unwieldly, and the pilot generally unsightly, and the investigation of the committee in respect to casualties occasioned by stock being knocked down by the bullnose type of drawbar does not show them sufficiently numerous to warrant the assumption that the bullnose or rigid coupler is objectionable.

The most desirable form of coupler for double-heading would consist of the standard automatic coupler, with the buffer block and yoke as per M. C. B. drawing No. 11, for both pilot and tender, the details of attachment to tender or pilot to be such as the height of the engine and tender might require to maintain the standard height; the question of vertical and lateral motion to be determined by the topography and curvature of the particular locality in which the device is used, but in general it is the opinion of the committee that the flexibility allowed as per M. C. B. recommended practice, drawing B will be found sufficient.

A Railroad Scene at Little Falls, N. Y.

Mr. W. J. Wilgus, Chief Engineer of the New York Central, has discovered, among a collection of prints made by his father, two copies of an interesting engraving which is here reproduced, about one-half size, and made comparable with a present day photograph. One of these valuable old prints has been presented to the New York Transportation Club. The original title, and its date 1838, is copied in the reproduction, but we fail to show the fine quality of the original drawing and engraving.

The locomotive shows a walking beam with four connecting rods to the drivers, but it is apparent that the artist drew somewhat on his imagination and re-designed the locomotive in some respects. The boiler, of elliptical section, suggests a wine cask, supported by a wooden floor, and this was probably the artist's idea of it, as the original indicates chimes and hoops quite clearly. The only available information we have of the locomotives then in use on the Utica & Schenectady Railroad is the following report made by the President for the Secretary of the Treasury:

"Albany, Oct. 9, 1838.

"Sir:—Your circular of the 16th of July last was received by me a few days ago. In answer to your inquiry I have to state: 1st. The Utica & Schenectady Railroad Company have in use twelve locomotive engines. 2nd. The names are, Nos. from 1 to 12. 3rd. The power or class is 9½ tons of high pressure. 4th. Constructed by M. W. Baldwin, of Philadelphia, in the years 1835 to 1836. 5th. Have been used, Nos. 1 to 4, 26 months; Nos. 5 to 8, 18 months; Nos. 9 to 12, 6 months.

"We have in our shop two stationary high pressure engines, one of five and the other of ten horse power, which have been used for two years.

"I am, with much respect, your obedient servant,

"ERASTUS CORNING,

"Pres. Utica & Schenectady Railroad."

"I. HOYT, Esq., Collector."

No. 1 was the twenty-eighth locomotive built by Mr. Baldwin, and was tried April 26, 1836. No. 7 was afterward sold to the Galena & Chicago Union Railroad, and became the pioneer locomotive of the Chicago & Northwestern Railway.

The Baldwin Locomotive Works have no drawing or print or dimensions of these locomotives, other than that the gage was 4 ft. 8½ in. The correctness of the drawing of a standard roadbed of 1838 cannot be guaranteed, and the English fallow deer in the foreground are not native here, nevertheless the print is an extremely interesting one.

In November the Simplon tunnel was excavated 755 ft., making the total penetration 23,004 ft.

Grade Crossing Problems in Cleveland.

The problems involved in the project to abolish all of the grade crossings in the city of Cleveland, Ohio, have lately been examined by a special committee of five persons, of whom J. H. Sheadle is Chairman, and this committee has made a report to the Cleveland Chamber of Commerce. The report is a model of clearness and simplicity. There are 135 grade crossings in Cleveland, and they are to be found on the lines of seven different railroads. Seventy-eight of the crossings are in streets on which traffic is not heavy. The committee sought information at the principal cities where grade crossings have already been abolished, and brief statements of past and present conditions at Chicago, Boston, Philadelphia, Buffalo and Rochester are given.

Discussing the value to the railroads and to the public of the abandonment of a grade crossing, the committee gives exact figures of the traffic for a day at certain selected crossings in Cleveland, showing the cost of the burden on pedestrians, vehicles, cars and passengers by the delays at the crossings. At one street, where a thousand pedestrians, a thousand vehicles and 400 street cars pass in a day, it was found that 88 trains blocked the crossing two hours and 56 minutes, equal to two minutes for each train, and street cars which arrived when no steam railroad train was due and therefore did not have to wait, were hindered, on the average, 40 seconds each trip, in consequence of the necessity of slackening speed. To compute the value of the time lost by people at crossings the report estimates the value of the time of persons at $1 a day each, and of vehicles at $5 a day; and on this basis it is found that the delays at Detroit street crossing cost the public $7.37 a day. In addition to this the delay of 40 seconds each to all the passengers in street cars makes an additional cost of $7.12. Thus in a year of 365 days the value of time wasted is $5,298, which is equal to about 5 per cent. on $106,000. This sum the city could afford to spend to abolish the crossing. At other crossings the loss of time is greater. Of the present crossings, 29 are used by street railroads; to abolish these would cost five million dollars. At 29 others, not used by street railroads, the cost would be three millions. By assessing $875,000 on the street railroads and 65 per cent. of the total on the steam railroads, it is calculated that the city would have to spend less than two millions to get rid of these 58 crossings.

The committee recommends that a law be passed requiring street railroads to pay at least 25 per cent. of the cost of abolishing crossings which they use; and that the Legislature authorize the appointment of a grade crossing commission consisting of the Governor, Auditor and the Commissioner of Railroads, to have power to order crossings abolished where cities and railroads do not agree.

Foreign Railroad Notes.

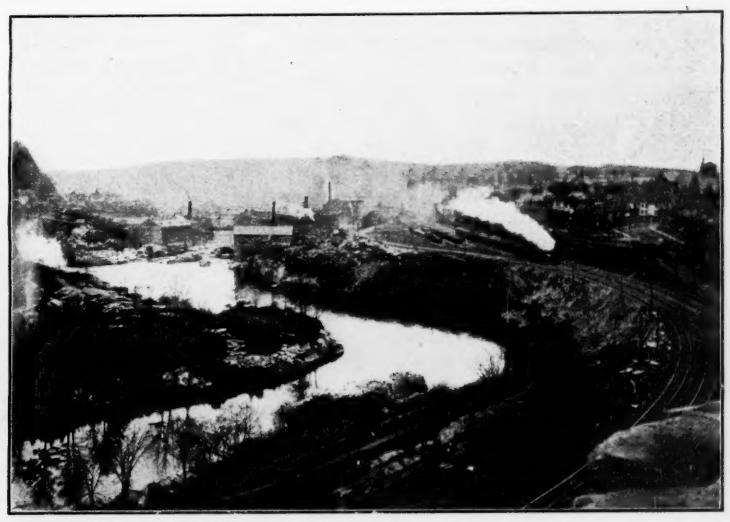
The Italian Society for the Study of Malaria has made arrangements with the three great railroads of the country by which attempts will be made to protect the employees who live in the chief fever districts, which are among the worst in the world, by providing their houses with mosquito nets, which is said to have been very effective where tried last year. Stations for the study of malaria will be established in some of these fever nests, and provision made for the examination of the blood of those attacked by malarial diseases.

The chimney sweep is an unknown animal, or nearly so, in this country, though we have all read about him. He is sufficiently numerous in Germany to have caused special regulations for his transportation, when in his working clothes. These clothes are so soiled that even fourth-class passengers object to being brought into contact with them, and the result is that the sweep is to be consigned to the baggage car, where the baggageman will doubtless teach him to keep his distance.

W. H. Bartlett. **Railroad Scene at Little Falls.** R. Sands.

(Valley of the Mohawk)

London: Published for the Proprietors by Geo. Virtue, 26 Ivy Lane. 1838.



Little Falls, N. Y. C. & H. R. R. R., 1900.

From a Photograph.

RAILROAD GAZETTE

ESTABLISHED IN APRIL, 1856.
PUBLISHED EVERY FRIDAY
At 32 Park Place, New York.

EDITORIAL ANNOUNCEMENTS.

CONTRIBUTIONS—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

ADVERTISEMENTS—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and these only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advetising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

During the month of January, we noted in our news columns orders for 11,979 cars and 329 locomotives, which may be compared with 5,524 cars and 165 locomotives ordered the same month last year. This would seem to indicate that car and locomotive business is holding up well. The number of cars ordered in December was about the same as in October. That was the best month of the year up to that time, and in November orders for about 20,000 cars were noted and in December 18,000. The number of locomotives ordered last month was only exceeded twice last year, namely, March with 380 and December with 429. Both of these were exceptionally good months for locomotive builders. The January car orders are divided as follows: Box, stock and refrigerator cars, 6,621; coal and ore cars, 4,870; flat cars, 128; tank cars, 18; ballast cars 163 and passenger cars 179. Of the locomotives, 118 were for passenger, 200 for freight and 11 for switching service.

The Control of the Southern Pacific.

Great railroad combinations are now commonplace and the public refused to be startled by the greatest one yet, which was announced last week, namely, the purchase of the Southern Pacific by the group known as the Harriman Syndicate. It was a colossal financial transaction. The outstanding stock of the Southern Pacific is $197,832,148. The control of this has changed hands, but just how much stock has been transferred or at what price we cannot say. The daily papers guess that anywhere from $40,000,000 to $70,000,000 must be paid for the stock bought, but they can only guess. Furthermore, the exact composition of the syndicate is not yet made public, but Mr. E. H. Harriman is apparently the chief figure.

This much we can safely say: The control of the Southern Pacific has passed to a small number of gentlemen who also control the Union Pacific, the Chicago & Alton, and the Kansas City Southern, and who influence strongly, if they do not actually control lines, all the way to the Atlantic. Thus harmonious working is assured among certain eastern trunk lines, certain middle western lines and two of the great lines to the Pacific, and this is a tremendous step in the process of consolidation. We do not need to say that we judge that this step is in the interest of the public as well as in the interest of the railroads, although the event will supply additional ammunition for the Interstate Commerce Commission in its campaign for complete control of the railroads. Undoubtedly, these great combinations may do much harm, and, on the other hand, they may do much good, depending upon the wisdom with which they are handled. But we are willing to assume for the present that the good will considerably outweigh the harm. It is not impossible that eventually the great concentrated power may be so badly used (as this power becomes more secure and complete) that the combinations will break down through the bad management of those who control them. This, however, is probably some years in the future.

It is not accurate to say that the Union Pacific has acquired control of the Southern Pacific. The most that we can say is that the control of these two properties is now in the same hands, but so far as we can learn their organizations will remain essentially as they are now for administrative and operating purposes. It would seem to be logical that the Central Pacific should be added to the Union Pacific and the line from Omaha to San Francisco worked as a unit with one operating head and staff. We have heard no hint that such is the policy of the new owners, but merely suggest it as a reasonable thing to look forward to. The strong and intelligent management of the Union Pacific is making remarkable improvements in that property and the nation would be benefited by extending the same far-sighted policy over the Central Pacific; but it must not be inferred from this that the Southern Pacific people have been standing idle while so many of the other great roads have been improving their physical condition. On the contrary, in recent years the Southern Pacific has been made highly efficient, but no such radical changes in grade and line have been made as are now in progress on the Union Pacific.

The change does not affect the relations of the Union Pacific at its eastern end. It connects at Omaha with the Chicago & Northwestern, completing the shortest line between Chicago and San Francisco. It has been suggested that the Chicago & Alton, a Harriman road, will replace the Chicago & Northwestern. But the Alton joins the Union Pacific at Kansas City, making a longer line and, besides, the Chicago & Northwestern is now represented in the directorate of the Union Pacific and there is some community of ownership. These conditions do not appear to be changed by the change of control of the Southern Pacific.

The Southern Pacific Company now operates directly 5,885 miles of road, besides 1,655 miles which are controlled but operated independently, making a total of 7,540 miles. In addition there are 2,064 miles belonging to a number of affiliated lines, in all of which the Southern Pacific has a controlling interest. These make a grand total of 9,604 miles of road owned, leased and affiliated, besides the steamships owned, on the Atlantic and the Pacific. The control of the system is vested in the Southern Pacific Company, organized in 1884 under the laws of Kentucky. The authorized capital stock is $200,000,000, of which $197,832,148 is outstanding. The company proper has $46,176,500 bonds outstanding. Of these $17,358,000 are on steamship property and the remaining $28,818,500 are issued against the stock of the Central Pacific and represent the company's ownership of that property. The outstanding bonds of the proprietary companies, at last report, were about 139½ million dollars, besides over 75 millions outstanding in bonds and notes against the Central Pacific.

Should the Central Pacific be separated from the rest of the system and united with the Union Pacific, it will add 1,354 miles to that system. Including the lines of the Oregon Railroad & Navigation, 1,136 miles, and the Oregon Short Line, 1,481 miles, the Union Pacific now operates 5,556 miles, which, with the Central Pacific mileage, would aggregate 6,910 miles.

Concerning Railroads in Cuba and the Philippines.

We wrote lately of the railroad situation in Cuba and of its overwhelming importance in the development of that unhappy island. Since that writing the Secretary of War has said something about railroads in the Philippines. He says that "capital is waiting, ready to inaugurate the enterprises which shall develop this vast natural wealth, but there is no authority under which railroads . . . can be constructed to get products of the land to market. The building of 45 miles of railroad already surveyed would throw open to the inhabitants of the islands as an unsurpassed health resort the high table lands of Benguet, in Northern Luzon . . . with the cool and invigorating climate of the northern temperate zone, but there is no law under which the railroad can be built." It is quite possible that in 10 years or less the United States could save the cost of this railroad in the health and lives of officers, soldiers and sailors alone, but there is no law under which it can be built, and so enterprise stands with hands tied.

The Philippines are important, but Cuba is vastly more important to us. At our doors lies this land ready to burst into prosperity if only cheap and abundant transportation can be provided; for it goes without saying that the conditions which will make investment in railroads attractive will make other investments attractive. We pointed out on Jan. 25 one way in which the present policy and law discourage railroad building there.

These two fields lie ready—Cuba certain to be profitable, the Philippines attractive at least, if worked judiciously, both waiting for the word from the Executive and Congress of the United States. But what is the word to be; when is it to be spoken? A Washington despatch says that "the opinion seemed general among them [the Senators] that Congress has nothing to do with the constitution proposed and adopted by a free and independent people such as the Cubans have been declared to be 'of right'." On the other hand, an intelligent correspondent, far from being an "Imperialist," writes from Havana:

"News telegrams from the United States were published stating that Washington had definitely declared its intention to get rid of Cuba by endorsing the new Constitution, and by turning the government of the island over to new authorities immediately. Commercial Havana was in consternation, and planters stood aghast. In spite of all the talk which has been made about Cuba free and independent, in absolute control of its own affairs, there is no question that few Cubans have at all expected to see a day of unabridged Cuban sovereignty, and it is also very doubtful if more than a small minority really desire that day. I think it beyond question that the force of the absolute independence movement has been greatly overestimated in the United States. Information which comes through reliable private channels in Washington leads me to the acceptance of the statements that Washington purposes the keeping of its pledge at an early day. The immediate effect of the decision is quite likely to be a seriously disturbed period. The way in which these recent despatches have been received is decidedly interesting. Dismay and incredulity are the notable features among the merchants and property owners. Some, among them one of the heaviest bankers in the city, flatly refused to believe that the United States purposes any recognition of an absolute Cuban independence. Others eagerly discuss the question of the security of foreign interests. A leading politician, one of the stoutest supporters of the independence party, received the news with the comment, 'Well, the sooner you go, the sooner you will come back.' On the whole, I should say that the attitude of the public in Havana is one of incredulity. For varying reasons, they cannot or will not believe that a real and unadulterated independence is even now a probability."

We do not pretend to say what ought to be done or what might be done. We do not feel well informed enough to have a settled opinion, much less to express one, on matters so complicated and so far removed from the little circle of thought and knowledge in which we work; but it seems obvious enough that it is unfortunate that something is not done. The costly process of subjugating the Philippines is prolonged by the delay to set in motion the machinery of industrial enterprise along the lines which it may safely follow for years to come. The systematic development of ways of transportation in Cuba, with all that such development means for Cuba is delayed and made more costly by the uncertainty as to our policy. It is pretty safe to speculate on the theory that money honestly invested in Cuba now, with the implied approval of our Government, will be protected by our Government later, if that should be necessary; but no business man will buy either a lawsuit or a war on a four per cent. basis. Possibly it might be wholesome to say now in some formal official way that the United States will insist on a liberal policy towards investors in railroads and other large enterprises in Cuba, and will insist also on perfect good faith toward them. This would be an unusual, possibly an undiplomatic, proceeding, but it would be only saying out loud what everyone knows must be recognized sooner or later. But there can be no question as to the Philippines. It is too late to think seriously of leaving these islands and the sooner we begin building railroads there the sooner we shall establish peace and prosperity. We sometimes think that the Cuban politician was right who said "the sooner you go the sooner you will come back," but in the Philippines there is no question of going.

Perhaps the moral of all this to the railroad man is to stir up his friends and representatives in Congress to a sense of the imminent importance of taking a little time to think seriously about two of the most serious questions now before the nation. On their speedy and wise settlement hang great interests,—possibly even another war in Cuba.

The Speed of Express Trains in Europe.

In an article in the *Archiv für Eisenbahnwesen*, Mr. W. Schulze makes a study of fast railroad trains in Europe which is exceptionally complete and ought to be authoritative, as it is based on the time-tables of the railroads of the several countries. On few subjects do more erroneous opinions prevail. Any extraordinary performance, though by a single train and for a moderate distance, is heralded around the world; and the country in which it occurred is credited with having the fastest serv-

ice in the world, when in fact 99-100ths of its trains may be comparatively slow.

Until very recently, both the highest speeds and the average speeds of trains were so much faster in England than in any Continental country that comparisons were hardly thought of. Of late years, however, speed has been greatly increased on many German trains and still more so on French expresses, and the impression seems to be general that England has fallen behind, as indeed it has in the sense that it no longer has the train with the greatest speed.

Mr. Schulze has aimed to show the speed of the fastest trains on all considerable lines of all limited trains (trains de luxe), and of all trains which run 90 kilometers or more without stopping, in all European countries. His 16 pages of tables give the termini, distance, starting and arriving time, time of trip between termini, number and duration of stops, actual running time and speed per hour of trains over 46 routes in Germany, 30 in France, 13 in Great Britain, 21 in Austria Hungary, 11 in Russia, 7 in Switzerland, 13 in Italy, 5 in Spain, 4 in Sweden, 4 in Roumania, 3 in Portugal, 3 in Denmark, 3 in Norway, 5 in Belgium, 6 in Holland, and 1 each in Bulgaria, Greece, Servia and Turkey. In many cases the data are given for several trains over the same route.

From these tables it appears that the fastest train in each of the several countries has the following speed, in miles per hour:

Fastest Trains in Europe.

France	58.1	Sweden	35.5
Great Britain	54.5	Switzerland	34.6
Germany	51.1	Servia	31.9
Belgium	49.4	Spain	30.6
Holland	46.8	Norway	28.1
Austria-Hungary	45.5	Portugal	27.1
Italy	41.7	Turkey	26.3
Russia	38.3	Bulgaria	21.9
Denmark	37.0	Greece	20.9
Roumania	36.1		

The longest runs without stopping are in France; Dax-Bordeaux, 92 miles, at 58.1 miles per hour (lessened since the accident near Dax); Angoulême-Bordeaux, 87 miles, 57.3 miles per hour (the same train as above); Paris-St. Quentin, 96 miles, 56.3 miles an hour; Paris-Arras, 120 miles; 55 miles an hour; Paris-Amiens, 81 miles, 54.2 miles an hour; Dijon-Laroche, 100 miles, 52 miles an hour. At speeds a little less than 50 miles an hour runs of 143 miles and 148 miles are made without stopping.

In England the run at fastest speed (54.5 miles per hour) is between Grantham and York, 83 miles; but runs of 120 miles (Bristol-London), 127 miles (London-Nottingham), 141 miles (Crewe-Carlisle), and 158 miles (London-Crewe) are made at speeds exceeding 50 miles an hour.

In Germany the highest speed (51.1 miles per hour) is made in a run of 99 miles between Wittenberge and Hamburg, and the longest run without a stop is 124 miles, between Munich and Nuremburg, at 41 miles an hour.

The long runs without stop of other countries are less important: 78 miles in Belgium, 85 in Holland, 85 in Austria, 65 in Russia, 90 in Italy and 57 in Switzerland are the longest.

The fastest train in Europe at the time these data were compiled was the French part of the limited Paris-Madrid train known as the "Southern express." It ran the 363 miles from Paris to Bordeaux at the average speed of 56.7 miles per hour. Since the accident to this train near Dax the speed over part of the French route has been reduced, but perhaps not between Paris and Bordeaux. Passengers on this train pay 50 per cent. more than the regular first class express fares. This is much the fastest "train de luxe" of the International Sleeping Car Co. No other reaches quite 50 miles per hour.

The new very fast expresses in France as a rule carry only first class passengers, which in a country where nine-tenths of the travel is in the lower classes is a serious limitation; but this practice is much older than the high speeds, and has been followed with trains running less than 35 miles an hour. On the fastest trains of nearly all other European countries second class passengers are taken, and third class on not a few. For instance, between London and Newcastle, 272 miles, there are four expresses running more than 50 miles an hour, which carry all classes of passengers, besides five other fast trains, at 41 to 48 miles an hour, also carrying the three classes. From Berlin to Hamburg, 178 miles, the fastest train, 50 miles an hour, carries three classes; two others with very nearly the same speed, two classes; and four other trains, 36 to 45½ miles per hour, three classes. Now from Paris to Marseilles the two fast trains (48 and 49 miles per hour) carry only first class passengers; the two expresses which carry the second as well as the first class run 38½ and 41 miles an hour; while the four trains open to all classes run from 33 to 35½ miles an hour. The Paris-Bordeaux route has, besides the Southern express, two expresses with first class cars only, one making the trip in 7 hours 5 minutes, the other in 8 hours 34 minutes. The second and third class passengers by four other trains must spend from 9 hours 50 minutes to 10 hours 23 minutes on the road—40 to 42 miles an hour. The Paris-Calais fast expresses carry two classes; and one train carrying third class runs 44½ miles an hour (the fastest express 53). If the average speed is taken of what are called express trains on any one route, the English road is far in advance of any French line (48 miles average between London and Newcastle, 43 miles Paris-Bordeaux, 39½ Paris-Marseilles, 43 Paris-Calais, 44½ Berlin-Hamburg, 41 Berlin-Cologne).

The speed of trains in the different countries seems to have been chiefly developed according to their several necessities, though customs once established have doubtless often been followed long after the circumstances had changed. Germany in the early days of its railroads can hardly be said to have had any great trade centers; but places of considerable importance were not far apart. To run a train 200 miles without stopping at every town of 10,000 inhabitants would have been thought an outrage, and the through travel was seldom large enough to justify long runs without stops, which alone makes very high speed practicable. But things have changed, and between such places as Berlin, Hamburg, Cologne, Frankfort, etc., there is a very large movement of passengers, and the whole growth of travel has been such as to warrant special fast trains for the large places while fully accommodating the travel of the intermediate stations by other trains. England from the first had great cities with a large through travel. France lies across several great travel routes, which it has been slow to accommodate properly; but lately has been making up for lost time. In this country we have had to begin at the bottom and have developed the greatest variety of circumstances, with one till lately peculiar to ourselves—tremendously long routes. And while we have some of the fastest trains of the world, the great majority run at so moderate a speed that the average, if ascertained (which perhaps might be easily done in a year's work over the Official Guide) would probably astonish the average man.

The Southern Railway and the Mobile & Ohio.

Announcement was made last week that arrangements are being perfected for the control of the Mobile & Ohio by the Southern Railway. The Mobile & Ohio has outstanding $5,320,600 of capital stock, of which $4,953,800, or over 93 per cent., is controlled by the holders of the general mortgage 4 per cent. bonds ($9,472,000 outstanding). The Southern Railway proposes to take up these bonds by issuing its own securities and so to acquire control of the road. The proposition hangs upon the deposit of more than a majority of the bonds for exchange into new Southern Railway securities and the offer is limited to March 1, 1901. The Southern will exchange stock trust certificates for present Mobile & Ohio stock, guaranteeing dividends at 4 per cent. per annum gold, except that the payment for the first year from April 1, 1901, shall be 2 per cent., and for the second year 3 per cent. Deposited general mortgage bonds are to be without the coupon of March 1, 1901, and the new securities exchanged for them will be collateral trust gold bonds of the same amount, principal and interest, and payable on the same dates. The directors of the Mobile & Ohio have recommended to security holders the adoption of the proposition and there is reason to believe that enough will accept to make the plan operative. Though earnings have been considerable in recent years, no distribution of dividends has been made to Mobile & Ohio stockholders except 1 per cent. paid in February, 1898.

The Mobile & Ohio is an old road; its first charter, obtained in Alabama, dates back to Feb. 3, 1848. Subsequently charters were obtained in Mississippi, Tennessee and Kentucky. The company received a land grant under the act of Congress of Sept. 20, 1850, the first railroad land grant made by national legislation. The main line was opened from Mobile to Columbus, Ky., 472 miles, in September, 1859. The extension to East Cairo, Ill., 21 miles, was opened Nov. 1, 1881. On Feb. 1, 1886, the St. Louis & Cairo, extending the line to East St. Louis, Ill., 151.6 miles, was leased for 45 years. The branch from Columbus to Montgomery, 167.2 miles, was opened July 1, 1898, but was not fully merged into the system until a year later. The company also owns all the capital stock of the Mobile & Bay Shore, extending from Prichards, just north of Mobile, southwest 38 miles to Portersville on the Gulf coast.

With its lines, owned and leased, the Mobile & Ohio brings to the Southern 914.1 miles, of which 188.5 miles is leased and the remaining 725.6 miles owned. At Mobile the company owns the property of the Mobile Docks Company, which has wharves along the Mobile River. At Montgomery, through trackage arrangement with the Alabama Midland, the Mobile & Ohio is enabled to reach the heart of the city and to use a belt line connecting the other converging roads. It also owns the Montgomery Suburban Street Ry. At the St. Louis end its trains pass over the St. Louis bridge and into the Union Station of the Terminal Railroad Association, which accommodates practically all the railroads entering that city.

Including the lately acquired Louisville, Evansville & St. Louis, the Southern now aggregates 6,836.96 miles. The Mobile & Ohio will bring the total up to 7,751.06 miles, placing the Southern among the largest systems of the country. By the consolidation the Southern acquires a direct route from its St. Louis terminal south to another terminal at Mobile, crossing other branches of the system at Corinth and West Point, Miss. The Montgomery branch also gives it entrance for the first time into that city and provides suitable terminals. It also acquires superior terminals at Mobile and in turn does a similar service for the Mobile & Ohio with its own large terminals at St. Louis. The Mobile & Ohio's branches recently built into the Alabama coal and iron fields will acquire new value in conjunction with the branches of the Southern into the same district. And so in several directions the property of the one company supplements that of the other which should result in benefit to both companies.

The gross earnings of the Mobile & Ohio for the year ended June 30, 1900, including the new Montgomery branch, were $5,996,731, from which the net earnings were $1,663,105, the operating expenses being 70.43 per cent. of the gross earnings. Interest and rentals required $1,418,645, which left a balance surplus, including other income of $337,629, or over 6 per cent. on the $5,320,600 outstanding capital stock. It would seem, therefore, even on the present basis, that the Southern is justified in its offer of 4 per cent. dividends after two years.

The Railroad Commission of Louisiana is comparatively new, but it has already developed characteristics of its own. One of these characteristics, in which it is quite unlike many state commissions, is terseness in its utterances. For brevity and directness its published decrees are models. A recent decision runs as follows: "William A. Williams vs. Steamers Warren and Trudeau. It having been shown that the defendants have discriminated against the plaintiffs in this case, by making contracts in advance, and thereby depriving defendants of the just rights of shippers to ship their goods by public carriers without preference, in their consecutive order of offering goods, it is hereby ordered and decreed that the defendants be fined $100, to be paid within ten days." Succinct language is not always evidence of good judgment, however. In another order the Commission evidently aims to follow the unwise principle which prevails in Texas—the principle of supervising everything that the railroads do, be it small or great. At the same meeting where was issued the above decision it was ordered that "No regular passenger or freight train in operation in Louisiana shall be discontinued, or their schedules changed, without the consent of the commission." That Texas theory is a very poor one to follow. Changing train schedules, or forbidding changes, is more likely to trouble the Commissioners than to help the public. The propensity for dealing with operating details, which is observable in more than one Southern Commission, appears to be due to the feeling that a commission is not useful unless it is all the time doing something. This is not true, of course. The most useful commission may be the one which does the least. In the case of the courts everybody recognizes that if business is dull the state of society is presumably favorable; the less work the courts have to do the clearer is the evidence that people are happy and prosperous. A railroad commission is in some respects like a court. In standing between the people and the railroads its primary function is to be there; not to do something. The first qualification of a Commissioner is a judicial temper. If he has that and exercises his intelligence to keep well informed about the conduct of the railroad service, he may be a valuable commissioner, even if he does not issue an order to the railroads once a year.

Announcement is made in this issue that next June there will be two vacancies in the Master Mechanics' scholarships at Stevens Institute. These scholarships relieve the holder from the payment of tuition and fees which in the course of a year amounts to something like $250. The conditions are that sons of present members and sons of deceased members of the association are eligible for the entrance examinations in June. Then if the places are not filled, any railroad employee or his son is eligible and may take the examinations in the fall. One might suppose that the competition for these scholarships would be pretty keen, and that boys would try hard to get them. However that may be, it is not unusual for one or more of these scholarships to be unfilled, and the results, as a whole, have been rather disappointing. The association in 1891 purchased four scholarships and that year one student entered. In about 10 years five students holding scholarships have graduated, one in 1895, two in 1897 and two in 1900; a few have entered, but have not finished the course, and a larger number have failed to pass the entrance examinations. Attention is called to these things, as is seems too bad for these scholarships to go begging when such fine opportunities are offered at Stevens Institute for an education in mechanical engineering.

NEW PUBLICATIONS.

Modern Electric Railway Motors. By George T. Hanchett. Octavo, 200 pages, illustrated. New York: Street Railway Publishing Co.

The object of this book is to show how electric railroad motors are made and why they are made so, and this purpose is well carried out. The book is largely descriptive. General principles are laid down, past and present practice is illustrated, and comparative merit is discussed. There is a chapter especially given to handling and repairing motors, and one, the last chapter, is designers. It is believed that, with the exception of the last chapter, the book can be readily understood by all who have made a thorough study of Ohm's law. As a means of acquiring general information about electric railroad motors this book is useful. Accompanying it is a tabulated, detached sheet giving principal dimensions of modern electric railroad motors.

Engineering Education; Proceedings of the Eighth Annual Meeting of the Society for the Promotion of Engineering Education, July, 1900. Vol. XIII, octavo, 378 pages. New York: Engineering News Publishing Co. Price, $2.50.

The eighth volume of the proceedings of this enthusiastic and industrious Society is like the preceding volumes in that it is made up of addresses, reports and discussions on various phases of the important work to which these gentlemen are devoting their lives. The President's ad-

dress by Prof. Baker deals with engineering education in the United States at the end of the century. The Committee on Industrial Education makes a long and important report which is discussed at considerable length. Perhaps the most important of the other reports are on business methods in teaching education on the promotion of engineering education.

Engines and Engine Running. By Joshua Rose. Octavo, 410 pages, illustrated. New York: D. Van Nostrand Co. Price, $2.50.

This book is divided into fifteen "parts" and, as indicated by its title, is a hand-book for practical use in the design and care of engines, both locomotive and stationary. There are questions and answers along the above lines; diagrams of various features and operations; tables of condensed information from formulae, and practical advice given from the experience of the author. There is much readily available information on condensers and condensing engines; on various valve gears; and on the basic mechanical principles. Altogether it is a sensible and useful book.

Elevation and Stadia Tables for Obtaining Differences of Altitude, Horizontal Distances, etc., Together With Hydraulic Tables Giving Velocities for Various Channels and Slopes. By Arthur P. Davis, M. Am. Soc. C. E., Hydrographer U. S. Geological Survey. Forty-four pages, octavo. New York: John Wiley & Sons; London: Chapman & Hall, Limited. 1901. Price $1.

The tables made and compiled by Mr. Davis cover quite completely and in convenient form the requirements for stadia determinations. They give differences of altitude for observed distances and observed vertical angles, corrections for curvature and refraction, reductions to horizontal, correction for focal length, etc. The hydraulic tables give velocity in feet per second based on Kutter's formula with various co-efficients of roughness.

Proceedings of the Railway Superintendents of Bridges and Buildings.—The Proceedings of the tenth annual meeting of the Superintendents of Bridges and Buildings, held last October at St. Louis, have now been issued in pamphlet form, and can be got from the Secretary, Mr. S. F. Patterson, Concord, N. H. This is a book of over 300 pages, and contains the reports and discussions in full. Those interested in the question of concrete masonry should get a copy. The report on this subject by Mr. W. A. Rogers, of the Chicago, Milwaukee & St. Paul, is doubtless the best thing so far written on concrete.

TRADE CATALOGUES.

Railroad Jacks.—A. O. Norton, 167 Oliver street, Boston, Mass., sends a new catalogue of jacks for general railroad use. This advertises the Norton patent ball-bearing jacks and "sure drop" track jacks, which are well known. The catalogue gives the discounts going into effect Feb. 1, and describes, with illustrations, the various excellent tools made by this house.

Graphite as a Lubricant.—The Joseph Dixon Crucible Co., Jersey City, N. J., issues a new edition of a pamphlet containing information on friction and the uses of graphite as a lubricant. The pamphlet gives the opinions and experience of many users and is worth reading.

Asbestos.—The H. W. Johns Mfg. Co., 100 William street, New York City, sends a little pamphlet entitled "Asbestos Papers, Packings and Mill Board," just issued. It gives information concerning the various boards and packings made by this company, with weights, prices, etc.

Mechanical Draft.—The American Blower Co., Detroit, Mich., has issued an illustrated catalogue, No. 118, showing the "A B C" system of mechanical draft, forced and induced by blowers and exhaust fans. It gives a concise statement of advantages gained by the use of mechanical draft; shows by good illustration the various devices used, and many applications made by this company; and contains convenient tables of dimensions and data on draft, fuel consumption, use of steam, and kindred subjects.

Paints and Painting.—Some weeks ago we published some remarks by Mr. W. H. Loomis, President of the National Paint Works, giving his opinion and summary of his experiences as to the manufacture and use of paint. That material and considerable more has been collected and printed in a pamphlet of 32 pages, with a cover, which pamphlet may be had on application to the National Paint Works, Williamsport, Pa. The matter, in addition to that which we published, describes specifically various different brands of paint made by the company and gives examples of their use and opinions of engineers. Besides being an advertisement this pamphlet will doubtless be of considerable value to those who are charged with the care of structures.

Vibrations From the Central London (Underground).

We noted last week the fact that the British Board of Trade has appointed a committee, consisting of Sir John Wolfe Barry, Lord Rayleigh, and Prof. Ewing, to examine and report on the circumstances of and, if possible, to suggest a remedy for the vibrations caused by the trains of the Central London, these being 70 to 100 ft. below the surface. Concerning this *The Engineer* says:

"It appears that the nuisance is not present all along the line, but affects particular districts; and further, the existence of troublesome vibration was not presupposed by anybody. It has come, indeed, as a surprise to engineers and land and houseowners alike; therefore there is no provision in the company's act which will enable those injured to claim compensation. Their only chance is to prove that the line is worked improperly—a matter which may well be one of extreme difficulty.

"The localization of the vibration may be due to any one or all of three causes—the nature of the strata traversed, the construction of the tunnel and permanent way, or the speeds at which the trains run. We have no reason to doubt that the latter-named causes are non-existent. We must seek in the strata for this difference in vibration; and we are informed that those places where the tube traverses gravel are the worst, while the London clay seems to be less able to transmit vibration. Again, the deeper the tube below the surface the more widespread is the commotion. This result might be anticipated from Mallet's earthquake researches. The magnitude of the vibrations is variously stated. According to some persons it is very slight, others say that it shakes their houses to such a degree that they cannot be inhabited with comfort. Houses as much as 100 yards to the north or south of the line are affected, it is said.

"It is obvious that a cast-iron tube is just the thing to be set in vibration; and the probability is also that synchronous, and therefore cumulative, waves of vibration may easily enough be set up in various parts of it. Thus a wave may run before the train in one direction and another behind it in the opposite direction. The clays and stiff soils are competent at once to 'damp' the vibration and to check the dissemination of tremor, while the gravels, on the other hand, will neither act as dampers nor as non-conductors.

"The only available remedy will have to do with the rolling stock and the permanent way. The latter should be quite smooth, in good condition, and so ballasted that as little vibration as possible will be transmitted to the metal of the tube. Now any one of our readers can satisfy himself, for the outlay of twopence spent on a trip through the tube, that the permanent way, short as is the time since it was laid, is in a very bad condition. It is modeled on the American system, with a flat-footed rail spiked directly to cross sleepers. There are no fish-plates. Copper unions or bridges are used to make electrical continuity for the return current, but these connectors are, we believe, constantly broken. The coaches run very uneasily, with much clattering over the joints of the rails, and the rail tables are worn already into hills and hollows in a very curious way, which has certainly no parallel on any other railway that we have seen. All the facts tend to prove that if the permanent way were in good order few complaints would be heard. It would appear, indeed, as though it was only of late that cause of offense was given, which fact would point to the rapid deterioration of the permanent way as the principal cause of the mischief.

"So much has been said in this country about the excellence of American electrical work that it may seem rank heresy to assert that the American locomotives used for working the line are mainly to blame. These have each two four-wheeled bogies. These have bar frames, which are already beginning to crack and give trouble. The frames carry the field magnet rings. The axles of the wheels have armatures keyed directly on them. The clearance is about ¼ in. There are no springs to the axle boxes. The only springs are those between the upper part of the locomotive which has the driver's cab, the Westinghouse brake pump, and so on, on it, and the bogie. The total weight of the machine is 44½ tons, or 11 tons per axle; but of this about 7½ tons are dead weight—that is to say, without springs. This is considerably in excess of the dead or springless load carried by the rails under any steam locomotive; and as the trains attain a speed of over 30 miles an hour between stations, it is easy to see that the hammering action must try the permanent way very severely. Improvements may follow either of two directions—the locomotives may be done away with and the trains propelled on the Sprague system with a motor under every car, which, being comparatively a small motor, would represent a very moderate weight; or else flexibility must be introduced in some way into the locomotive, if that is to be retained."

Electric Traction at Berlin.

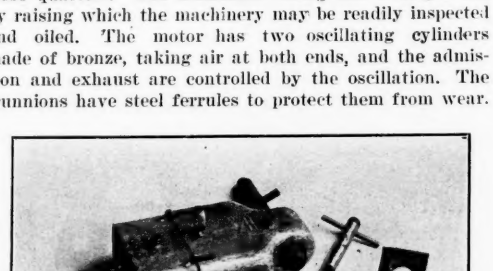
We have heretofore noted the trial of a system of electric traction for heavy suburban work at Berlin. This is on a line 12 kilometers long between the Potsdam station in Berlin and Zehlendorf. The third rail system is used. The normal electric train is intended to carry 410 passengers; it has 29 axles and weighs 220 tons. The maximum speed on a level is 55 kilometers an hour, but the mean speed is 45 kilometers. At each end of the train is a motor car with three axles and between these cars are eight ordinary suburban cars. A conductor for current runs the length of the train under the cars and at need a third motor car can be put in the middle of the train. A second conductor connects the motors in such way that they can be worked by one man at the head of the train. This arrangement of motor cars is the same as is to be used on the Manhattan Elevated in New York. It does away with switching at the end of the run and permits the interruption of the circuit at switches and other points in the track.

Each motor car carries three motors mounted directly on the axles, each motor taking a maximum of 200 amperes. The motors are put in parallel only when the speed reaches 20 kilometers an hour. The Westinghouse air-brake is used, but experiments are to be made with electric brakes. An air whistle is also used. The cars are lighted by electricity and each motor car has a small vertical boiler to provide steam for heating.

Power is taken from a plant installed for certain tramways, this being situated two kilometers from the suburban line. The current is transmitted at 750 volts, direct current being used. Two batteries of accumulators are used, one at each end of the line, these having 311 and 318 elements respectively. These are charged at 500 amperes and their capacity is 814 ampere hours if discharged in one hour, and 1,138 ampere hours if discharged in three hours. The electrical machinery is supplied by Messrs. Siemens & Halske.

An Improved Reversible Pneumatic Motor.

The illustration shows a pneumatic reversible motor in connection with means to rotate a spindle in which may be placed different tools used in building ships, boilers, bridges, engines and other work. The spindle is through the extreme end, and can be operated in very close quarters. The aluminum casing has a hinged lid, by raising which the machinery may be readily inspected and oiled. The motor has two oscillating cylinders made of bronze, taking air at both ends, and the admission and exhaust are controlled by the oscillation. The trunnions have steel ferrules to protect them from wear.



A Reversible Pneumatic Motor.

In the main frame there are two air chests, one on each side, one for live air, the other for exhaust, and by turning the handle half way around, the functions of these chests become reversed, thereby reversing the motion and readily controlling it. By a quarter turn of the handle it stops. The air is admitted and exhausted through the handle, which also has an adjustable collar which can be set so that the motor runs but one way. It has a detachable handle which is used when the drill is suspended or when used for tapping and reaming. This motor can be used in locomotive fire-boxes to expand all the flues in the sheet with self-feeding expanders, and also for drilling door sheets. Flanges of I-beams may be drilled by setting the point of the feed-sleeve against one flange and the drill in the other. It has few parts, and is very compact, powerful and economical in consumption of air. It is patented and made by the Helwig Manufacturing Co., of St. Paul, Minn.

Massachusetts Railroad Commissioners' Report.

The Railroad Commissioners of Massachusetts have issued the thirty-second annual report of their office. The length of railroad in the state is practically the same as last year, 2,108 miles. Of the 46 corporations reporting to the state only 11 are operating companies, and four of these did 99 per cent. of the business covered by the reports (not 99 per cent. of the business done in the state). Henceforth, practically all the railroad business of the state will be done by three companies, the Fitchburg having been consolidated with the Boston & Maine since the end of the fiscal year. The usual statistics are given in the report of the business done by the several roads. These statistics are for the whole of the lines of the companies reporting and therefore they do not afford an exhibit of the business of Massachusetts by itself. No passengers were killed in Massachusetts during the year by causes beyond their own control.

The estimated cost of the abolition of grade crossings during the year to June 30 was $273,672. The work represented by this sum was done, or is being done, in 11 towns, making an average expenditure of $24,879. The number of crossings was, we suppose, more than 11. Since the passage of the grade crossing law (1890) the total cost borne by the state to Jan. 1, 1901, has been $2,999,170, to which is to be added $1,881,551 paid by the state under a special law covering the improvements on the Boston & Providence road in Boston, Hyde Park and Dedham. The expenditures on crossings by the state, the municipalities and the railroads in 10 years have aggregated $17,904,656.

The Bridge Engineer makes the usual report on the condition of the railroad bridges of the state. The total number of bridges is 1,875, 14 more than the number shown the previous year. The total length of bridges in the state in feet is, wooden 57,711, stone 6,153, metal 57,612, total 121,476, or 23 miles, equal to 58 ft. per mile of railroad. Forty-six bridges have been rebuilt or strengthened during the year, in addition to the 14 new ones.

The report discusses briefly the absorption of the Bos-

ton & Albany by the New York Central and of the Fitchburg by the Boston & Maine. The discussion of state ownership which took place in the Legislature and the newspapers is thought to have been profitable, though the Legislature voted decisively against the proposition. Mention is made of the fact that the New York Central has made the mileage tickets of the Boston & Albany and the Central interchangeable, and this is called a reduction in fare from Massachusetts points to places on the Central. We think it would be more accurate to say that the change simply makes it more convenient for passengers to secure the 2-cent rate when making through journeys. The Commissioners believe that the new management of the Boston & Albany appreciates its duties and the wishes of the public. Governor Crane is praised for his business sagacity in getting $5,000,000 of Boston & Maine 3 per cent. bonds for the state's shares of stock in the Fitchburg road, which shares had never received any dividend.

The reduction of competition by the placing of practically all the railroad business of the state in the hands of three companies increases the responsibility incident to state supervision; but this "must be exercised in dealing with individual cases rather than in establishing general rules."

The law requiring the running of cheap morning and evening trains to and from Boston has proved a failure, and the Board recommends the Legislature to make a better one.

Five pages are given to a discussion of passenger fares outside the suburban district. The profit received by the railroads on passenger business has increased during the past four years and the roads have improved the service; "on parts of the lines the highest standards are maintained; the whole of each road should be brought up to this standard with all reasonable despatch." The Commissioners point out that a statement of the average fare received by a railroad does not throw much light on the question of the reasonableness of single ticket fares, because such a considerable proportion of the business is carried on season tickets. In this connection the amount of traffic carried on different tickets is given, for the New York, New Haven & Hartford, last year, as follows: Mileage books, $2,093,700; season tickets, $854,391; trip tickets, $2,479,642; single tickets, $11,326,928. Mileage books were first introduced on the Boston & Maine in 1881 and the New Haven road began using them in 1892.

One argument of the railroads against reducing fares is based on the fact that the rates on different divisions are the same as they were when these several divisions were independent roads. The Commission recognizes this argument, but seems to think that the railroads ought to more rapidly advance toward a uniform rate. It is not believed, however, that a uniform 2-cent rate should be established by statute. New York has never established a 2-cent rate by law except on the New York Central, and Ohio, in 1889, rejected such a law. It is useless to fix a maximum rate of fare, as such a statute may be an excuse for maintaining prices, and it seldom forces reductions. "The flexible rules of a progressive business management are always in closer step with the march of events than legislative attempts at regulation can be."

Local fares on the Boston & Albany are 2¼ cents, on the Boston & Maine from 2 cents to 2¾; and on the New Haven 2½ cents. To reduce all these to 2 cents would mean a very radical reduction in revenue; therefore, the Board recommends the issue of a 500-mile book at $10 which, it is believed, will produce a reasonable decrease in fares without interfering with the prosperity of the companies. In other states the 500-mile book is very popular.

Crossed and Open Eccentric Rods.

With the D slide valve, having external admission, and operated through the ordinary rocker shaft the eccentric rods of a locomotive are "open" and the lead increases as the link is hooked up. This motion is known as indirect acting: that is, when the eccentrics are moving ahead, the valves are moving backward. Until recently we rarely heard the term "crossed eccentric rods," but piston valves are now much used on locomotives, and the question of satisfactorily operating these valves under different conditions is presented to the locomotive builders; whether they shall be external admission, with or without a rocker shaft, necessitating open or crossed eccentric rods, respectively; internal admission with a rocker shaft, necessitating crossed eccentric rods; or internal admission without a rocker shaft, necessitating open eccentric rods. It has been suggested to use internal admission valves with the marine type of link, without a rocker shaft, in which case the eccentric rods would also be open. This, as far as we know, has not yet become locomotive practice.

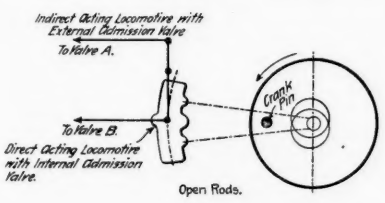

Indirect Acting Locomotive with External Admission Valve
To Valve A.
To Valve B.
Direct Acting Locomotive with Internal Admission Valve.
Crank Pin
Open Rods.

Fig. 1.

In marine engine practice with internal admission piston valves, where the valves are controlled directly without a rocker shaft, the eccentric rods are as a rule connected on the link are as shown at A, Fig. 3, and the valve cannot receive the full throw of the eccentric; that is, the travel of the valve is slightly less than twice the throw of the eccentric.

If internal admission piston valves are used and operated through the medium of an ordinary rocker shaft, the effective motion of the valve as related to the motion of the piston is reversed, and the eccentrics must be located on the axle relatively in the same position as shown by Fig. 2, the eccentric rods will necessarily be crossed and the locomotive is indirect acting, that is, when the eccentrics are moving backward, the valves are moving forward.

There are locomotives running successfully, equipped

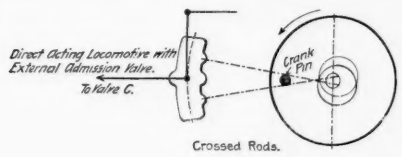


Fig. 2.

with external admission piston valves without a rocker shaft, and with crossed eccentric rods, and there are other locomotives working as well with internal admission piston valves without rocker shaft, and open eccentric rods. In both cases the eccentric rods are connected to jaw pins placed back of the link arc. It is apparent that when the external admission piston valve is used with a rocker shaft, and the valve operated from the point A, Fig. 1, that the eccentrics must be located on the axle relatively in the same position as they are when the internal admission piston valve is used without a rocker shaft and the valve operated from the point B, Fig. 1, but the direction of the motion of the valve is reversed relatively to the motion of the piston, and the eccentric rods will be open in both cases.

If, however, in the latter case, the valve admitted

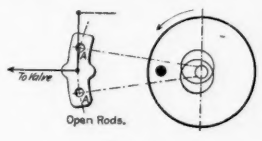


Fig. 3.

steam at the ends and exhausted it at the middle the same as the ordinary slide valve and the valve operated from the point C, Fig. 2, omitting the rocker shaft, the eccentrics would be located on the axle the opposite to that of the indirect acting locomotive and the eccentric rods will be crossed, the forward motion eccentric preceding the crank pin, and the backward motion eccentric following the crank pin.

The relation of the eccentrics to the crank pin with and without the rocker shaft, is shown by Figs. 1 and 2. When the crank pin is on the forward dead center the eccentric rods will be open when using a rocker shaft, Fig. 1, and without a rocker shaft they will be crossed as shown by Fig. 2. S. J. D.

TECHNICAL.

Manufacturing and Business.

The American Twist Drill Co. has been incorporated in New Jersey, with a capital stock of $200,000, by Charles D. Wiley, Agnes M. Ross and William L. Fearns. The office is in Camden, N. J.

The Bettendorf Axle Co. has taken over the agency of the Bettendorf I-beam bolsters from the Cloud Steel Truck Co., and has opened an office at 1590 Old Colony Building, Chicago, Ill.

The Simplex Railway Appliance Co., of Hammond, Ind., wants to open an office in New York city, preferably with some one already in the railroad supply business, and invites correspondence.

J. C. Halladay has resigned as Western Sales Agent of the Pickering Spring Co., Ltd., of Philadelphia, to take effect March 1, 1901. He will be succeeded by J. B. Gibb, with offices at 209 Great Northern Building, Chicago.

We are advised that Falls Hollow staybolts, made by the Falls Hollow Staybolt Co., Cuyahoga Falls, Ohio, have been specified for the 15 locomotives ordered by the International & Great Northern from the Cooke Locomotive & Machine Co.

C. A. Thompson having resigned as representative of the Standard Steel Works, for St. Louis and the Southwestern territory, the company has opened an office of its own at 712 Security Building, St. Louis. S. H. Riddel will be the representative.

Iron and Steel.

Milliken Bros., of Brooklyn, N. Y., have a contract for six steel bridges for the National Tehuantepec of Mexico, also a contract for an 800-ft. steel bridge for the Costa Rica Ry.

The American Steel & Wire Co. has advanced its prices about $2 per ton, as ordered by the Board of Directors. The New Castle, Pa., plant of the company, which has been idle for about a year, will soon be put in operation.

Four bids were received by the Navy Department on Feb. 1 for building three protected cruisers. The bidders were: Neafie & Levy Shipbuilding Co., of Philadelphia, at $2,740,000; the Newport News Shipbuilding Company, at $2,741,000; the Bath Iron Works, at $2,750,000; and William R. Trigg Co., of Richmond, Va.

Gasoline Motor Cars in the Philippines.

Messrs. Fairbanks, Morse & Co. recently received a letter from the Disbursing Officer of the Signal Corps of the United States Army concerning some gasoline motor cars which were shipped to the Philippine Islands some months ago for the use of Signal Corps men in repairing military telegraph lines. In a report to that officer by the Signal Officer of the Division of the Philippines dated Manila, Oct. 13, he says: "The new gasoline motor cars work nicely. They are the finest piece of machinery on the island, and can go faster than the regular trains go."

Locomotive Duty.

The Master Mechanics' Association committee on maximum monthly mileage that it is practicable and advisable to make, how best to make it, in freight and passenger service has sent out the following circular: "The committee will consider it a personal favor if the heads of the Mechanical Department of each road in the association will see that the inclosed blank is filled in promptly and sent to Mr. T. H. Symington, Superintendent Motive Power, Atlantic Coast Line Railroad Co., Wilmington, N. C. As a number of these blanks are sent to the heads of departments, we would respectfully suggest that they be distributed among division officers to be filled in, and then consolidated into one report for the line in the general office." The blank is too voluminous to reprint here.

Handling Coal for Locomotives.

The Master Mechanics' Association committee on methods for unloading locomotive coal, prior to being unloaded on the tank, has sent out a circular asking:

1. What class or design of coal chutes are in use on your line? If more than one, which do you consider the most effective and economical?
2. Does your most approved design require the use of hopper bottom cars?
3. Please state what advantages you derive from the approved design over others?
4. What does it cost per ton of coal delivered on the tank with your most approved method?
5. Does this design admit of weighing coal before being placed on the tender?
6. What is the capacity per hour of your most improved design, and can this capacity be increased as desired, and how many men are required to operate it?
7. What ground space does this design require? Can it be used for single or double track?

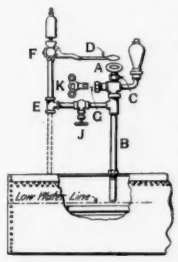
A reply not later than March 1 to Mr. William Garstang, Superintendent Motive Power, C., C., C. & St. L. Ry., is requested.

Reducing the Cost of Machine Work.

In *Cassier's Magazine* for February it is said that the foundry is already doing finished work in a most satisfactory manner, as, for instance, in turning out pump cylinder heads which require no machine work at all, being quite ready to put on, when cleaned, and that some very large marine engine cylinder heads are now cast on which no machine work whatever will be put, the disadvantage of radiation arising from the rougher cast surfaces being offset by the use of special filler. The writer, Mr. W. D. Forbes, finds that in this case is shown an economy of not less than 50 per cent. of first cost, after taking into account the increased cost of pattern and flasks, without the slightest detriment to the proper working of the engine.

The Crane Low Water Alarm.

The Crane Co., of Chicago, has just put on the market a safety device for guarding against low water in boilers, which is shown in the illustration. The operation of this device is as follows: The pipe B is dropped within 2 in. of the top of the boiler tubes. So long as the water in the boiler does not go below the low water line, the water in the pipe B prevents the steam from entering, and reaching the fusible plug at C. But the moment the water falls below the low water line the steam rushes into pipe B and fuses the plug C, thereby allowing the steam to escape through a hole in the wheel A, which raises lever D, which, in turn, opens the whistle valve F, and sounds the alarm. To renew the fusible plug the valve G is closed with the key K, the nut at C is unscrewed and the fusible plug put in place. The nut C is then replaced, the valve G opened and the key withdrawn; thus showing that the valve G is wide open and ready for operation, as the key is so designed that it cannot be withdrawn unless the valve G is wide open. A strong feature of this device is that it can be readily tested, by simply opening the valve J, which allows the live steam in pipe E to pass into pipe B, which will melt the fusible plug.



Receivers for the Rogers Locomotive Works.

William Barbour and John C. Pennington have been appointed receivers for the Rogers Locomotive Works, at Paterson, N. J., by Vice-Chancellor Emery at Jersey City. Mr. Pennington is counsel for Jacob S. Rogers.

Compressed Air.

On Thursday of last week a party of 18 or 20 gentlemen (railroad men and capitalists) visited Rome, N. Y., as the guests of the Compressed Air Company. Their car was hauled about 12 or 15 miles on the track of the

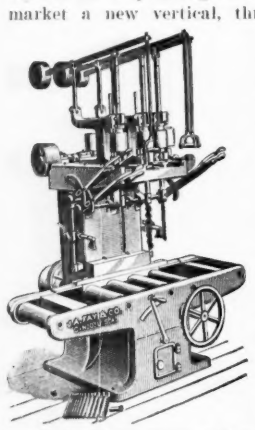
New York Central by a compressed air locomotive, reaching a maximum speed estimated at 27 miles an hour. In the power house of the Rome City Railway they saw a new compressor made by the Norwalk Iron Works, being installed for local service. The large compressor now there is to be sent to Buffalo for the Exposition service. The company is building at the Rome Locomotive Works trucks and engines for 25 motor cars, 10 of which will go to Buffalo.

Reported Sale of Carnegie Stock.

Some of the morning papers on Wednesday announced the acquisition by Mr. J. Pierpont Morgan and his associates of Mr. Carnegie's interest in the stock of the Carnegie Company. Mr. Carnegie held nearly 54 per cent. of $160,000,000 total stock. Thus the transfer carries with it the control of the Carnegie Company.

An Improved Car Boring Machine.

The J. A. Fay & Egan Co. have recently put on the market a new vertical, three-spindle, car borer, made under patents issued Jan. 30 and Feb. 6, 1900. It is a very heavy machine especially designed for car shops. The transverse movement of the spindles is 12 in. from center to center, and their vertical motion will bore through 14 in. of timber. They are furnished with stop collars for gaging the depth of the bore, and have different sized pulleys to vary the speed of auger. The machine is arranged for three augers, the spindles being separately adjustable either across the stick or vertically, transverse adjustment being made by levers supplied with friction lock under instant control of operator, vertical motion of spindles being controlled by a counter-balanced lever. The counter-shaft is on the floor attached to back of the column, a belt conveys the power to spindles, and adjustable stops are attached at the top of column, to prevent augers lifting material from the table. The table is fitted with large rollers, the two outside ones being driven by chains, the internal ones driven by gearing on a counter-shaft operating in either direction, and moving timber by power to right or left by lever in front. There is also a hand wheel and screw connected to the rollers and accessible to operator for moving material.



Triple Valve Tests.

The M. C. B. Committee on Triple Valves have recently completed tests of a new form of triple submitted by Mr. R. Fitzgerald, General Superintendent, Chicago Junction Railway. The tests were made upon the association racy in the laboratory of Purdue University. They were conducted by Messrs. G. W. Rhodes, W. S. Morris and William McIntosh, representing the M. C. B. committee. The committee was assisted by Mr. A. J. Cota, Air-Brake Instructor of the Burlington System; Mr. W. P. Huntley, Jr., Air-Brake Instructor of the C. & O. R. R., and also by members of the instruction corps and by students of Purdue University. The owner of the valves was represented by Messrs. Harvey S. Park and M. W. Hibbard.

Erie Canal Contracts.

The New York State Canal Board, on Jan. 30, closed contracts Nos. 3 and 5 of the Middle Division and No. 3 of the Eastern Division of the Erie Canal, made under the $9,000,000 Improvement Act. The awards made were: Western Division—To Dunfee & Company, of Syracuse, on contract No. 3, $29,951; contract No. 5, $39,280. Eastern Division—To Brummelkamp, Lane & Co., on contract No. 3, $30,316.

Sykes' Block Signal Apparatus.

Sykes' electric locking apparatus for block signals is now in use in New South Wales, the railroad commissioners having lately had it installed between Petersham and Ashfield. It is said that Sykes' apparatus is now in use on nine or more railroads in Great Britain, the principal ones being the Great Eastern; London & Southwestern; London, Brighton & South Coast; Glasgow & Southwestern; London, Chatham & Dover; Metropolitan District; Central London; City & Waterloo and the Southeastern.

Interlocking.

The Boston & Maine has just finished an interlocking tower at Lowell, Mass., containing 85 levers. This cabin is near the Hale street bridge and it was opened for use on Jan. 27. The machine has 88 spaces. The working force from 7 a. m. to 3 p. m. consists of six men; from 3 to 11, six, and from 11 to 7, four.

THE SCRAP HEAP.

Traffic Notes.

The Attorney-General of Ohio has withdrawn the suits instituted by his predecessor against the Central Passenger Association designed to stop the use of interchangeable mileage tickets on the railroads of Ohio.

The Baltimore & Ohio has secured the establishment of a new steamship line from Philadelphia to Hamburg, arrangements having been made to have large modern steamers sail every two weeks. The road has lately finished a new pier at Snyder avenue, Philadelphia, for the accommodation of export business.

It is announced in Buffalo that on and after April 1 the trains of the Grand Trunk now using the Erie Street Station in that city will run to and from the main station of the New York Central at Exchange street. Grand Trunk trains running to and from the Lehigh Valley Station will continue to use that station as at present.

It is said that a commercial traveler of Des Moines, Iowa, traveling on a certificate of the Western Passenger Association, bought, during the year 1900, tickets aggregating 18,353 miles, this being the largest mileage reported by any passenger to the Mileage Bureau. The amount paid for these tickets was $549.68, and the rebate was $182.62. Dividing the above mentioned number by 365 shows that the average distance traveled daily was 53 miles.

It is announced at Portland, Me., that the Grand Trunk will hereafter carry export freight to that city throughout the year, instead of during the winter only, as heretofore. The road has made a contract with the Dominion Steamship Company for a regular steamship service, summer and winter. Newspaper accounts indicate that the reason for this action is the increase of business, which has been more rapid than the increase in facilities at Montreal. Officers of the road state that the summer export and import business at the latter city will not be seriously curtailed.

The statement that the Government will hereafter favor the Central Pacific, in sending men and supplies to the Pacific coast, because that is a bond-aided railroad, appears to be the exact opposite of the truth. A Washington paper says that the Secretary of War, after conference with the Secretary of the Treasury, has decided to offer his contracts for transportation to general competition. Hitherto the Central Pacific has monopolized the business, but the Atchison, Topeka & Santa Fe has complained, and the result of the complaint is the action now taken. The Secretary of the Treasury says that, everything else being equal, the Government ought to patronize the Central Pacific, but that if another road giving equally satisfactory service, makes a lower bid such bid ought to be accepted.

A Derailment That Damaged a Pond

A curious case was brought before the Supreme Court of Pennsylvania recently. Plaintiffs owned an ice pond and brought an action for $7,500 damage to 15,000 tons of ice, due to 6,000 gallons of oil from an oil tank car which had been derailed. The derailment, according to the evidence, was not due to any fault on the part of the defendant. The oil ran through a break in the tank at the rate of two gallons a minute, and flowed into plaintiff's pond. The defendant used every effort to pump the oil from the car into another car without success, and at the end of 11 hours from the time of the accident, the defendant, finding that nothing could be done to save the oil, opened the valve at the bottom of the tank and let it all run out. The court said, in refusing to permit a recovery by the plaintiff, that as the quantity of oil which had already flowed into the stream was sufficient to render the ice made from its waters useless, letting out the remaining oil is an insignificant fact, and cannot be said to be sufficient to place the responsibility on the defendant. (Commercial Ice Co. vs. Reading.)

American Rails for Australia.

The Commissioner of Railways recently called for tenders for the supply of 17,440 tons of rails and 1,880 tons of fish plates, about two years' supply for the railways in Victoria. Up to the present time no rails have ever been manufactured locally in large quantities . . . Six tenders were received—most of them through the Agent General in London (Sir Andrew Clarke)—from English, German and American companies. Mr. Mathieson fully anticipated that the department would have to pay a high price, but the figures were generally below his estimates. Messrs. James McEwan & Co., Limited, representing the Illinois Steel Company, Chicago, and the Loraine Steel Company, Cleveland, United States, tendered for the rails at £5 17s. 9d. ($28.65) per ton and the fish plates at £7 7s. 6d. ($35.88) per ton, and their tenders were accepted. Two years ago the successful tenderers agreed to supply the steel rails at £4 18s. 6d. ($23.96) per ton and the fish plates at £7 18s. 3d. ($38.50). The railway authorities thought that they would not be able to secure the rails and fish plates for much less than £180,000 ($875,970); but Messrs. McEwan & Co.'s tenders work out at about £117,000 ($569,380). An English company recently offered to establish the necessary works in Victoria to manufacture rails if the Railway Department would guarantee to give it orders for 10,000 tons of rails a year for 10 years. The matter was considered by the late Ministry, but nothing came of the project, probably because Victoria does not seem to possess the requisite supply of iron ore.—*Melbourne Argus.*

The Queen and the Railroads.

It was not until June, 1842, that the Queen took her first railway journey, traveling from Windsor to Paddington on the Great Western line. The Master of the Horse, whose business it was to provide for the Queen's ordinary journeys by road, was much put out by this innovation. He marched into the station several hours before the start to inspect the engine, as he would have examined a steed; but greater merriment was occasioned by the Queen's coachman, who insisted that, as a matter of form, he ought to make believe to drive the engine. After some dispute, he was told that he might climb on to the pilot engine, which was to precede the royal train, and the good fellow actually did this; but his scarlet livery, white gloves and wig suffered so much from soot and sparks that he made no more fuss about his rights in after trips. The run to Paddington was successfully accomplished, and the motion of the train was found to be so pleasant that the Queen readily trusted to the railway for a longer journey a few weeks later, when she paid her first visit to Scotland. The late Queen became a great railway traveler, and with her frequent tours and visits, in the earlier part of her reign, to towns and to country seats, and her annual trips latterly to Balmoral and Osborne, she must have covered in her time almost as many miles of railway journeying as any other human being not actually employed in the running of trains. Perhaps the most famous incident in connection with her journeys by rail was the gracious letter which she addressed in 1868 to the directors of the leading railway companies, deploring the many lamentable accidents which were then occurring on the lines of the United Kingdom, and urging that as much care should be taken in safeguarding the lives of ordinary passengers as was observed in regard to her own railway journeys. This was, of course, a "counsel of perfection," nevertheless it doubtless had a good influence in promoting those improvements in safety appliances, such as the universal adoption of block signaling, interlocking and continuous brakes, which have made railway traveling nowadays so very much safer than it was at the time the Queen wrote her famous letter. The journey over their lines of so august a personage as a Queen is a heavy responsibility for the management of any railway, and it is highly creditable to British railway administration that no serious mishap, either to herself or her companions or suite, ever marred the Queen's numerous railway journeys. Her Majesty was always most considerate to all the railway officials with whom she came in contact, and many railwaymen are the proud owners of mementoes of her regard.—*Transport.*

To Deepen Curtis Bay Channel.

The House has agreed to a resolution passed by the Senate calling for an estimate for deepening the channel of Curtis Bay, Baltimore Harbor, Maryland, and increasing the depth of the main ship channel of Patapsco River and Baltimore Harbor.

Subjects for the Master Mechanics.

The Committee on Subjects, Master Mechanics' Association, says that the committee to report at the next convention will be pleased to have members suggest suitable subjects for committee work for next year, and also subjects for topical discussion at the convention of 1901. Members having suggestions to make will please communicate promptly with the Chairman of the committee, W. H. Marshall, Superintendent Motive Power, L. S. & M. S. Ry., Cleveland, Ohio.

Various Appropriations.

The Sundry Civil bill was reported to the House on Monday, and carries an appropriation of over $59,700,000, which is nearly $11,000,000 less than the estimates and over $5,700,000 less than the amount provided for the current fiscal year. For the Interstate Commerce Commission $275,000 is appropriated, the amount provided to enable the Commission to keep informed regarding compliance with the act to promote the safety of employees and travelers being increased from $15,000 to $25,000. For a new electric lighting plant for the Department of the Interior $74,000 is appropriated. For the improvement of the Potomac River below Washington $98,000 is provided, and to enable the architect of the Capitol to prepare plans and specifications for rebuilding and extending the central portion of the Capitol building, and for the construction of a fire-proof building adjacent to the Capitol for offices, storage and power plant $1,500 is made immediately available, the report with specifications and estimates to be presented at the next session of Congress.

New Steamship Lines Between Vancouver and Alaska.

The Canadian Pacific has bought the steamships and other property of the Canadian Pacific Navigation Co., which comprise the smaller vessels engaged in the coastwise trade between Vancouver, B. C., and the ports of North British Columbia and Alaska; also the boats plying between Victoria, Vancouver and New Westminster. It is said to be probable that the Canadian Pacific will put on a number of vessels to run to Skaguay, St. Michael and other Alaskan ports. Announcement is made that the White Pass & Yukon has lately bought two steamers in England to run between Vancouver and Skaguay, Alaska.

Technical Schools.

Rensselaer Polytechnic Institute.—Mr. Frank C. Osborn, Director, American Society of Civil Engineers, of the Osborn Company, Civil Engineers, of Cleveland, delivered a lecture on Jan. 21 before the students of the Rensselaer Polytechnic Institute at Troy, N. Y., on "Architectural Features in Engineering Designs."

Purdue University.—Mr. Godfrey Rhodes, Assistant General Superintendent of the B. & M. R. R. R., delivered on Thursday, Jan. 24, an address before the engineering students of Purdue University. His subject was "The Burlington Brake Tests." He first described the various changes which step by step have led from the hand-brake to the present high speed brake, and briefly discussed their significance. After referring to the extent and character of the Burlington tests, he emphasized the fact that every brake which on that occasion was subjected to test had been pronounced unsatisfactory by the committee, and that all have since completely disappeared from service. It was worthy of note, he said, that no one had complained or had found fault with the committee because of its conclusions. Those whose apparatus had given most promise found in the results facts which served to give new ideals and to lift their practice to higher planes. The Burlington tests proved the impracticability of the buffer brakes and disclosed serious defects in the automatic air-brake which at that time was in its early stages of development. The work, he said, had profited by the association of a large number of persons who were concerned in planning its details and in the final execution of the tests, the credit for the results being shared by from 30 to 50 people. The modesty with which the speaker referred to the difficulties encountered, and to the far-reaching effect of the results obtained, aroused but slight suspicion in the minds of the student audience that he was the leader in the great work he described.

Worcester Polytechnic Institute.—During the holiday recess the news was made public of the resignation of Dr. T. C. Mendenhall as President of the Worcester Polytechnic Institute. He has taken this step because of failing health and at the close of the college year will go abroad for two years for rest. His administration has covered seven years, he having gone there from the United States Coast Survey, of which he was Superintendent. During that time the Institute has grown in endowment, in facilities, in the number of its faculty and in students. The courses of studies have been extended and revised.

The Stevens' Scholarships.—At the Stevens' Institute of Technology there is now one vacancy in the scholarships of the Master Mechanics' Association, and it is expected that one scholar will graduate next June, so that there will be two vacancies at that time. Under the provisions of Article 7 of the Constitution, candidates for these scholarships at the June examinations are confined to "sons of members or sons of deceased members of the association." If there be not a sufficient number of such applicants for the June examinations, then applications will be received from other railroad employees or their sons, for the fall examinations, preference being given to the sons of employees or sons of deceased employees of the mechanical department. The spring entrance examinations will be held at Stevens Institute of Technology, Hoboken, N. J.

on June 18, 19, 20, 21 and 22, 1901. Candidates for these scholarships should apply to Mr. Jos. W. Taylor, Secretary, The Rookery, Chicago.

The Tien-tsin Peking Railroad.

A well known German railroad officer, Mr. Franz Woas, who is with the troops in China, wrote from Pekin, Oct. 31, that the treatment of the railroad to Pekin from Tien-tsin by the insurgent Chinese was an example of thoroughness of destruction such as may serve as a model for nations carrying on war. As the European troops marched in, they found the road not only broken, but completely carried off—not one rail nor one tie was left. The bridges seem to have been too heavy for them. They were destroyed, to be sure, but the girders were left where they fell. Expeditions of troops have been made to villages miles away from the road to recover rails. The ties had generally been burned, and the fish-plates, etc., used by the local blacksmiths. This complete destruction and the absence of any source of supply nearer than half round the world make the maintenance of any considerable military force in Pekin during winter very difficult.

Two Proposed Roads in Bolivia.

The President of the Republic has promulgated a law passed by the National Congress providing that the receipts from the tax on alcohol and distilled liquors and the product of the tax on crude rubber produced in the Department of La Paz be applied, for a period of three years, to building a railroad from Lake Titicaca to the city of La Paz, in conformity with the plans approved by the Government. The Executive has also been authorized to formulate the conditions of a contract for the construction of a railroad from Viacha to Oruro in connection with branch lines from Guaqui to La Paz, and from Oruro to Cochabamba, offering as a guarantee for the building of same the first section of the line from Titicaca to La Paz, together with the receipts from the tax on alcohol for such a time as may be necessary, paying interest on the amount invested at 6 per cent. per annum.

Graphite Grease for Signals.

A report by the supervisor of signals on a trunk line, showing the satisfactory results obtained with a water-proof graphite grease, says: "At one point, from Oct. 1 to Nov. 28, ¼ lb. of the graphite grease was used on locks, cranks and compensators on outside, and on machine in tower. The cost of putting on was found to be very little more than oil. The same test was made at another point on the road with the same good results. The supervisor found the water-proof graphite grease better than any other kind of lubricant, as it can be applied quickly and stays where it is put. It is also clean, and the water has no effect upon it. Therefore the supervisor strongly recommends the use of this grease for all the places named above. As the graphite used in the manufacture of this grease is Dixon's Pure Flake Graphite, the lubricating qualities are easily understood, and if the water-proof qualities are all that the manufacturers claim, which the tests seem to demonstrate, its economy and usefulness for all bearings and exposed parts of railroad signals are very evident."

Preventing Vibrations From Machinery.

To what exercise of ingenuity the engineer is sometimes put in accomplishing this was illustrated a dozen or more years ago in one large factory where, on an upper floor, a row of small engines had to be installed for the independent driving of a corresponding number of different machines. Though the building was of substantial construction, with steel floor beams, it was a foregone conclusion that that row of engines would cause trouble if set with nothing but the floor as foundation, and as it was undesirable to raise them much above the floor level, each engine was provided with a separate foundation, built up of brick and mortar in the usual way, but suspended by steel straps between the floor beams and thus projecting down into the head room of the floor below. Seen from there, each foundation, with its engine, appeared as if resting on airy nothing. But those suspended foundations accomplished all that was expected of them as vibration absorbers, and are, as far as is known, still doing good service.—*Cassier's Magazine.*

Chairman Knapp's Views.

Hon. Martin A. Knapp, Chairman of the Interstate Commerce Commission, is of the opinion that the general rate situation of the country at the present time is comparatively fair. He says: "In the East there seems to be a better observance of tariff than in the West, although it cannot be said that the situation is free from irregularities. The situation west of Chicago has improved, but whatever improvement there has been is solely due to improved commercial conditions. How long it will last will depend on the amount of tonnage available. Certain it is this so-called improvement is not permanent. The Western lines have held a number of conferences during the past year, and undoubtedly they resulted in some good, but the good was by no means of a lasting character. Consolidations, such as we have witnessed of late, will not wipe out all competition or secure the maintenance of rates. In Trunk line territory consolidations will regulate in a measure, but the same doctrine cannot apply to the West. There are too many diverse interests, and I do not look for any radical developments in that territory. I do not regard consolidation as the solution to the railroad problem. Legislation is necessary; pledges and agreements are ropes of sand.

"Every sound-thinking official to-day admits the inadequacy of the present Interstate Commerce law and the need for amending the same. As a body, the Western executives have acknowledged that their efforts to effect permanent tariff improvement have been in vain, and there is now a movement among the roads to come together and meet the Interstate Commerce Commission and shippers in an effort to secure needed legislation. I do not believe that the Cullom bill will pass. Personally, I have never favored the measure in its present shape, but I do believe that legislation can and will be secured at the next session of Congress which will be satisfactory to the roads and shippers alike. The Commission and shippers are disposed to meet the railroads more than half way. It is time that something should be done to remove the evil effects of the Anti-Trust act. —*Leonard's Railway News.*

LOCOMOTIVE BUILDING.

The Oregon Short Line has bought five engines from stock from the Cooke Locomotive & Machine Co.

The International & Great Northern has ordered 15 locomotives from the Cooke Locomotive & Machine Co.

The New York, Philadelphia & Norfolk is having two engines built by the Baldwin Locomotive Works.

CAR BUILDING.

The Chicago, Milwaukee & St. Paul will build some box cars of large capacity.

The Illinois Central has ordered 1,000 box cars from the American Car & Foundry Co.

The Louisville & Nashville will it is stated, build 250 freight cars at its New Decatur shops.

The General Chemical Co., New York, has ordered 20 cars from the American Car & Foundry Co. They will be built at Milton.

The Lake Shore & Eastern has ordered 150 gondola cars, of 100,000 lbs. capacity, from the Pressed Steel Car Co.

The Nevada-California-Oregon has ordered two coaches and two combination cars from the American Car & Foundry Co.

The Pittsburgh, Shawmut & Northern has ordered 550 hopper bottom coal cars from the American Car & Foundry Co.

The El Paso & Northeastern has ordered 50 coal, 25 box and six water (tank) cars from the American Car & Foundry Co.

The Soc. Hullero Espanola de Barcelona, of Spain, has ordered 12 freight cars from the American Car & Foundry Co.

The Pere Marquette has ordered one parlor and buffet, two parlor, and two buffet passenger cars from the American Car & Foundry Co.

The Ohio & Little Kenawha has ordered 10 freight cars from the American Car & Foundry Co. They will be built at St. Charles.

The Great Northern has ordered 3,600 box and 3,000 coal cars from the Haskell & Barker Car Co. and is reported in the market for 98 cars for passenger service.

The Richmond & Petersburg (J. F. Pfetch, General Manager, Richmond, Va.), an electric road now building, is asking bids on seven cars.

The Missouri, Kansas & Texas order with the American Car & Foundry Co., referred to Feb. 1, calls for 1,000 box, 800 coal and two combination coal and stock cars.

The Soc. Minière & Métallurgique de Penarroya, operating two small railroads in Spain, has ordered 50 flat bottom and six hopper bottom gondola cars from the American Car & Foundry Co. The principal office of the company is 12 Place Vendome, Paris, France.

The Lehigh Valley has ordered seven coaches from the Wason Car Mfg. Co.; four coaches with smoking compartments from the Jackson & Sharp Co.; and three combination passenger and baggage, and six baggage cars from the American Car & Foundry Co. All will have wide vestibules.

The St. Louis Southwestern order with the American Car & Foundry Co., mentioned in our issue of Dec. 28, calls for 500 box cars of 60,000 lbs. capacity for immediate delivery. They will weigh 35,500 lbs., measure 36 ft. long, 8 ft. 10¼ in. wide, and 6 ft. 10 in. high. The special equipment includes American and Shickle, Harrison & Howard bolsters, National hollow brake-beams, "Diamond S" brake-shoes, Westinghouse brakes, St. Louis flush doors and Player trucks.

The Delaware, Lackawanna & Western order with the Barney & Smith Car Co., for 15 passenger coaches, mentioned in our issue of Feb. 1, calls for June 15 delivery. The cars will measure 55 ft. over end sills and 9 ft. 8 in. wide over side sills, and will be equipped with Sterlingworth brake-beams, Westinghouse brakes, Magnus brasses, Gould couplers, Forsythe curtain fixtures, Pantasote curtains, Standard steel platforms, Pintsch gas, and Gould broad vestibules on eight of the cars and open platforms on the others.

The Missouri Pacific order with the American Car & Foundry Co. for 15 coaches and 10 chair cars, noted Jan. 25, calls for May and June delivery. The coaches will have 70 seats and measure 62 ft. long, 10 ft. 1 in. wide and 10 ft. 6⅞ in. high; the chair cars will have 55 seats and measure the same as the coaches. The specifications call for National hollow brake-beams, Westinghouse brakes, Burrowes' spring roller curtain fixtures with Pantasote curtains, M. P. standard draft rigging, McCord Journal boxes and journal box lids, Pintsch gas, Standard steel platforms and Pullman wide vestibules.

BRIDGE BUILDING.

ASHLAND, KY.—The Ashland & Ironton Bridge Co., incorporated under the laws of the states of Kentucky and Ohio, is advertising its intention to build a bridge across the Ohio River about one mile below the town of Ashland, Ky., to Ironton, Ohio. A. C. Campbell, John S. Hager and B. W. Stack, of Ashland, are reported interested.

BARBERTON, OHIO.—A bridge will be built over the railroads, according to report, by the Barberton Belt Line R. R.

BOONE, IOWA.—A two-span iron bridge, according to report, will be built over Skunk River north of this place.

BOSTON, MASS.—A bill has been introduced in the Massachusetts House providing that a bridge be built from a point opposite Leverett street, Boston, over Fort Point Channel to Cambridge, to be under the supervision of the Metropolitan Park Commissioners, and to cost not more than $700,000, the cost to be apportioned between Cambridge, Boston, Newton and Watertown.

BRITISH AFRICA.—The American Bridge Co. has closed a contract with the Crown Agents for the Colonies of Great Britain, to furnish and erect on the line of the Uganda Railway in Africa 20 viaducts. This will require about 6,000 tons of steel work. These viaducts consist of plate girder spans on towers; the highest tower will be 112 ft. Sir A. M. Rendel & Co., of London, England, are the Engineers for the Crown Agents.

CEDAR FALLS, IOWA.—We are informed that bids are wanted Feb. 8, by D. W. Foote, County Auditor, at Waterloo, Iowa, for a steel girder highway bridge 362 ft. long on masonry foundations across the Cedar River at Cedar Falls, estimated to cost $25,000. Plans are on file with the County Auditor.

CEDAR RAPIDS, IOWA.—The State Board of Railroad Commissioners has approved the modified plans of the viaduct on Avenue A, over the tracks of the Illinois Central on Fourth street.

CHARLOTTETOWN, PRINCE EDWARD ISLAND.—Bids are asked, by the Department of Public Works, Richard Smith, Secretary, for rebuilding Leslie's bridge at Souris Wert. Plans can be seen at the office of Hon. Thomas Kickham, Souris.

CHICAGO, ILL.—The Trustees of the Sanitary District have let contracts as follows for the new bridges to be built at Canal street, Ashland avenue and at Main street:

Canal street bridge—	
Lydon & Drews Co., substructure	$53,914
American Bridge Co., superstructure	71,100
Total	$125,014
Main street bridge—	
Lydon & Drews Co., substructure	51,913
American Bridge Co., superstructure	72,800
Total	$124,713
Ashland avenue bridge—	
Page & Schnable, substructure	35,542
Massillon Bridge & Iron Co., superstructure	91,200
Total	$126,742
Total cost of the three bridges	376,469

CLARION, PA.—Contracts will soon be let, according to report, by the Clarion & Summerville R. R., for a bridge 250 ft. long over the ravine and creek at Summerville. The office is at 314 Fourth avenue, Pittsburgh, Pa.

CLEVELAND, OHIO.—The New York, Chicago & St. Louis, according to report, is considering replacing several bridges with new structures.

The following bids were received, Jan. 22, for building the Middle Seneca street bridge: Substructure, F. E. Gribben, Cleveland, $49,695; Beirs & Doolittle, Cleveland, $62,728; Standard Contracting Co., Cleveland, $58,530; superstructure, G. Wm. Doersbach, Sandusky, $60,823; Andrew Dall & Son, Cleveland, $65,000; American Bridge Co., $64,093; King Bridge Co., Cleveland, $63,381; Variety Iron Works, Cleveland, $70,538; Toledo Bridge Co., Toledo, $67,810; Massillon Bridge Co., Massillon, $71,550.

COLUMBUS, OHIO.—County Surveyor Harry Maetzel informs us as follows regarding the bridge work for Franklin County in 1901, which will be let at three different lettings, viz., March 13, 20, and 27:

Hibernia Bridge over Big Walnut Creek on the National Road.—This is a three-span, through, skew, plate girder bridge, each girder 78 ft. long, with brick paved roadway 21½ ft. wide, and side road (unpaved) for single track street railroad.

Reynoldsburg Bridge over Black Lick Creek on the National Road.—This is a single span, square, through, low-riveted Warren truss, 106 ft. long on end pins, with single paved roadway, 25 ft. wide with street railroad track on one side. Old masonry to be used with minor changes.

Sandusky Street Bridge over the Scioto River.—This is a two-span, square, through, Warren truss bridge, each span 148 ft. on end pins, with a brick paved roadway 20 ft. wide. Work consists of new superstructure, one new abutment and one new pier and remodeling one old abutment in substructure, approaches and paving.

Waterworks Bridge over Olentangy River.—This work consists of taking down the superstructure now located at Sandusky street, remodeling and strengthening it to carry street cars and then rebuilding it at this site. Work consists of superstructure (as above described), substructure (2 new abutments), approaches. Length of span 204 ft. on end pins.

Milburn Bridge over Black Lick Creek on East Broad Street.—This work consists of taking down the superstructure now at Reynoldsburg, remodeling it and rebuilding it at this site. Work consists of superstructure (as above described), substructure (one new abutment and rearranging one old abutment), and approaches.

In addition to this work there are to be built quite a number of small bridges consisting of short plate girder spans and I beam spans; all of these will be built under the accepted plan for doing this work in this county, namely, with permanent floors; i.e., brick arches or buckle plates between the I beams and concrete road surface.

DECATUR COUNTY, GA.—A bill has been introduced in the House and referred to the Committee on Interstate and Foreign Commerce authorizing the Georgia Pine Ry. to build a bridge over the Flint River, in Decatur County, Ga.

DENVER, COLO.—A preliminary survey is being made for the proposed viaduct on West Colfax avenue over the Platte River. The cost is estimated at $700,000.

DES MOINES, IOWA.—The committee to select a location for the viaduct on the route to the army post site, has recommended to the Council the construction of the viaduct on Seventh street, and also include in their recommendation for a bridge over Coon River, and a secondary viaduct over the tracks of the Chicago Great Western south of the river.

DICKERSON, MD.—The Baltimore & Ohio, according to report, will build two steel bridges across the Monocacy River, near Dickerson, on the Metropolitan Branch. One will be 700 ft. long and the other 400 ft.

FORT DODGE, IOWA.—The plans for the new viaduct over the tracks of the Minneapolis & St. Louis and the Chicago, Rock Island & Pacific have been finished. It is to be a steel structure 700 ft. long. (Feb. 1, p. 86.)

GENEVA COUNTY, ALA.—The Senate, on Feb. 2, passed the bill providing for a bridge to be built across the Choctawhatchee River, by the Chattahoochee & Gulf Ry., which had been previously passed by the House. (Feb. 1, p. 86.)

GLASSPORT, PA.—The Monongahela River is to be spanned at Glassport by a highway bridge, in which John P. McIntyre, of McKeesport, is reported interested.

GRAY'S POINT, MO.—Congress has passed the bill authorizing a bridge built over the Missouri River at a point at or near Gray's Point, Mo., to Thebe, Ill., by the Southern Illinois & Missouri Bridge Co. The bridge is to be used jointly by the Chicago & Eastern Illinois, St. Louis Southwestern and the Missouri Pacific. The cost is estimated between $1,500,000 and $2,000,000. The main channel span is to be 1,000 ft. Myron J. Carpenter and Chas. W. Hillard are interested.

HOMESTEAD, PA.—The American Bridge Company has contracted with the Pittsburgh & Lake Erie for the new steel bridge over the Monongahela River at Homestead.

HULL, QUE.—The Alonzo Wright Bridge Co. will rebuild the Wright bridge over the Gatineau River.

INDIANAPOLIS, IND.—The County Commissioners, according to report, have decided to build a bridge over White River at Raymond street.

JERSEY SHORE, PA.—Civil Engineer Henry C. Reeder will make plans for the proposed improvements to the two iron county bridges over the river at this place, which are to be crossed by a trolley road.

KINGSTON, TENN.—The Senate has passed a bill authorizing a bridge across the Clinch River, near Kingston.

MICHIGAN CITY, IND.—The County Council is considering plans for a bridge at Second street. Reports state that bids will soon be wanted.

MINNEAPOLIS, MINN.—A new bridge is petitioned for at Washington avenue by the citizens of South Minneapolis.

MOLINE, ILL.—On Feb. 2, the Senate passed the bill already passed by the House, authorizing the Moline & Peoria R. R. to build a bridge across Rock River. (Feb. 1, p. 86.)

MONTEZUMA, GA.—An iron bridge, to cost $10,000, is proposed at this place. J. C. Ellington, Mayor.

NASHVILLE, TENN.—The Citizens Bridge Committee contemplate building a bridge across Cumberland River at Broad street in connection with a proposed boulevard.

NEW YORK, N. Y.—The U. S. Harbor Line Board gave a hearing, on Jan. 31, in New York, on the proposed Blackwell's Island bridge over the East River. The New York & Long Island Bridge Co. claim to own a franchise giving it exclusive rights for a bridge over Blackwell's Island. The Secretary of War has not yet approved the plans for this bridge.

The House, on Feb. 2, passed a bill extending the time for the completion of the Hudson River Bridge until Jan. 1, 1912.

OTTAWA, ONT.—The Township of Nepean has made application to the Minister of Railways for a subway or overhead bridge on Wellington street, over the tracks of the Canadian Pacific and the Canada Atlantic.

The Ottawa County Council has appointed a special committee to procure plans for a viaduct or a steel bridge over the railroad tracks on Richmond Road, near Hintonburg.

PARKER, S. D.—Bids are asked, until March 4, for a steel bridge 100 ft. long over Vermilion River, Marion Township. Joseph J. Waltner, Jr., Auditor, Turner County.

PENNSYLVANIA.—Last week the Senate passed a bill authorizing the Fourth Pool Connecting R. R. to build and maintain a bridge over the Monongahela River. The usual amendments making the bridge subject to the Secretary of War in its design and construction in the interests of navigation, were adopted. Construction work must begin within one year and be completed in three years. Samuel A. Roelofs, of Elwood City, Pa., is the President.

PETERBOROUGH, ONT.—The County Councils of Peterborough and Victoria are considering building a joint bridge over the Burnt River near Kinmount, in the Township of Sommerville. The Government will be asked for an appropriation.

PHILADELPHIA, PA.—The Board of Street Surveyors, on Jan. 28, visited Chew street, Walnut Lane, Washington Lane and High street, Germantown, where it is proposed to change the grade crossings on the Chestnut Hill branch of the Philadelphia & Reading. This work will soon be let.

PINE BLUFF, ARK.—The Senate and House have passed the bill authorizing a bridge across the Arkansas River by Jefferson County, Ark., within five miles of Pine Bluff. (Jan. 1, p. 14.)

PITTSBURGH, PA.—A bill was introduced in the House during the last week in January, and referred to the Committee on Interstate and Foreign Commerce, authorizing the Western Bridge Co., to build a bridge across the Ohio River. We reported the incorporation of this company Sept. 14, 1900, p. 613.

Superintendent John Brunner of the Bureau of Engineering and Construction is preparing plans for the improvement of the Point bridge. The work will cost about $25,000. George M. Wilson, Director of Public Works.

PLYMOUTH, CONN.—The Selectmen of Plymouth have petitioned the Railroad Commissioners for a bridge over the tracks of the Consolidated Road at Terryville.

PORT KENNEDY, PA.—The Philadelphia & Reading has made a proposition to the County Commissioners to build a steel bridge over the main line tracks to replace the wooden structure used as an approach to the bridge now building over the Schuylkill.

RAT PORTAGE, ONT.—The Canadian Pacific is reported about to build a steel bridge at either Agnes or Hamilton street, Rat Portage.

ROBSON, B. C.—John Ginn, of Winnipeg, has the contract for the stone substructure of the new bridge over the Columbia River at Robson on the line of the Crows Nest Pass Ry., of the Canadian Pacific. The superstructure is let to the Dominion Bridge Co. The bridge will consist of two 200-ft. spans, a draw of 130 ft., and three 50-ft. spans, and will be about 50 ft. above river level.

ROCHESTER, N. Y.—A bill is before the State Senate appropriating $35,000 for a bridge at Plymouth avenue.

ROME, N. Y.—The State Engineer has been instructed to make plans for a steel bridge at East Dominick street, over Black River Canal. The present bridge at that place will be removed to another site. Estimated cost, $39,000.

ROWLESBURG, W. VA.—We are told that bids will be wanted some time during the summer, by Preston County, for a steel bridge about 300 ft. long over Cheat River, estimated to cost from $15,000 to $20,000. George H. Walls, Clerk, County Court, Kingwood.

ST. ALBERT, ONT.—Morris Shaver, of South Indian, Ont., is receiving bids, until Feb. 9, for a 198-ft. steel bridge over the Nation River at St. Albert.

ST. CATHARINES, ONT.—The Railway Committee of the Privy Council is considering plans for the Queenston street bridge.

ST. LOUIS, MO.—The House Committee on Interstate and Foreign Commerce has reported favorably the bill which reduces to 565 ft., the length of the main channel span of the proposed third bridge over the Mississippi River at St. Louis. The War Department recommends a span not less than 700 ft. The bill further provides that in case the bridge be built below the Eads Bridge, it shall be of an unbroken and continuous single span, and in case the bridge be built above the Eads Bridge and not more than 1,700 ft. above the bridge, it shall have three fixed channel spans of the same length as those of the Eads Bridge. That the East Louis & St. Louis Bridge & Construction Company has the option of building the proposed bridge at a point opposite or near Mulianphy street, or three-fourths to one mile above the Eads Bridge.

SAULT STE. MARIE, ONT.—Wm. Morris, of Toronto, is applying for a charter for the International Bridge Co., to build a bridge over St. Mary River, near Sault Ste. Marie. The capital stock is to be $500,000, and the bridge is to be a highway and trolley road bridge. It will have a draw of about 200 ft.

SAVANNAH, GA.—The Seaboard Air Line is reported considering building a drawbridge across the Savannah River at Savannah to cost about $100,000, to connect its terminals on Hutchinson's Island with the city.

SHREVEPORT, LA.—The U. S. Senate has passed a bill authorizing a bridge and a dam built across the Twelve-Mile Bayou, Louisiana. Some time ago we reported that the Texarkana, Shreveport & Natchez contemplated a bridge at this place.

STRONG, KAN.—Reports state that bids will soon be wanted by the County Commissioners at Cottonwood Falls for a bridge across Cottonwood River.

TRENTON, N. J.—The House, on Feb. 1, passed the bill authorizing the United New Jersey R. R. & Canal Co. (Pennsylvania R. R.) to build a four-track bridge across the Delaware River near Trenton. This bill has already passed the Senate. (Jan. 25, p. 67.)

WATERFORD, N. Y.—A bill has been introduced in the Assembly appropriating $10,000 for a bridge over Fulton street in the town of Waterford.

WATERLOO, IOWA.—The Board of Supervisors of Black Hawk County have made an appropriation of $25,000 for a new bridge across Cedar River at the foot of Fourth street in this city. The balance of the cost of the bridge will be paid by the city and the Cedar Falls & Waterloo Rapid Transit Company.

WELLAND, ONT.—Welland County proposes to build two bridges over the Welland River, for which plans and specifications are asked.

The County Council will also build a bridge over the canal connecting east and west Main streets. E. Morris, Warden of the County, has reported that it will be necessary to rebuild three bridges, namely Montrose, Beckett's and O'Reilly's.

WHEELING, W. VA.—The Tennessee & North Carolina will soon need a number of bridges. Address J. J. Holloway, President.

WILMINGTON, DEL.—The New Castle County Levy Court has petitioned the Legislature to issue bonds for about $170,000 to complete the bridge over Seventh street, and to build a new cantilever bridge over Christiana River at Market street. The War Department has ordered the removal of the present Market street bridge.

WINNIPEG, MAN.—It is reported that Kelly Bros., of Winnipeg, have the contract for the masonry work on the new Canadian Pacific bridge over the Red River at Winnipeg. The Dominion Bridge Co., as stated in this column, Dec. 7, p. 16, has the contract for the superstructure. The total cost is to be about $160,000. The dimensions are: Total length, 720 ft.; four fixed spans, 120 ft.; draw span, 240 ft.; two abutments and five piers. The bridge is to be 70 ft. high, and located some distance up the river from the old structure.

YORK, NEB.—Bids are wanted, until Feb. 26, for bridges to be built by the county during the year. C. C. Boslan, County Clerk.

Other Structures.

COLLINWOOD, OHIO.—The Lake Shore & Michigan Southern is reported making plans for shops at Collinwood, about 7 miles east of Cleveland, which will include the following: A machine shop, 530 x 240 ft.; storehouse, 60 x 300 ft.; power house, 85 x 116 ft.; paint shop, 335 x 160 ft.; car shop, 335 x 110 ft.; a freight repair shop, 335 x 110 ft. In addition there will be a brass foundry, a blacksmith shop, a boiler shop and other buildings, averaging about 100 x 300 ft. All the buildings are to be brick, with steel frames.

CONNELLSVILLE, PA.—We are informed that plans are being made for new shops for the Baltimore & Ohio at Connellsville, to replace those recently burned.

DOVER, N. J.—An ordinance is before the Dover Council for a new depot for the D., L. & W., which is to be built of brick and granite. The main building will be 90 ft. long and about 40 ft. wide.

FORT BARRANCAS, FLA.—Proposals will be received, Feb. 23, for building a wharf, officers' quarters, barracks and storehouse at Fort McRee, Fla. Address T. N. Horn, Q. M.

GALVESTON, TEX.—Richardson & Co., who own and operate grain elevators along the Santa Fe, are reported to be considering building a new grain elevator at the east end wharves of the Santa Fe in Galveston.

NEW ORLEANS, LA.—The contract for building the new Louisville & Nashville passenger depot in New Orleans has been let to Walter T. Carey & Bros., of New Orleans. The structure will be of pressed brick and cost about $50,000.

NEW YORK, N. Y.—The American Bridge Company has a contract for furnishing the steel work to the Bureau of Yards & Docks for building No. 22 at the New York Naval Yard.

TEHUANTEPEC, MEXICO.—Inquiries are reported in the market for structural material for the repair shops of the National Tehuantepec Ry. of Mexico, building at Coatzacoalcos. The contract will amount to about $60,000.

WASHINGTON, D. C.—A bill was favorably reported last week in the House providing for a new municipal building for Washington to cost, including the site, not over $2,500,000, and to be used by the United States and District of Columbia jointly.

A bill was also favorably reported in the House providing for a temple of justice for the accommodation of the United States and District Courts, Department of Justice, National Law Library, etc., to cost not over $7,000,000.

WILLMAR, MINN.—The Great Northern contemplates building a freight depot during the spring in connection with changes on the Breckinridge Division.

MEETINGS AND ANNOUNCEMENTS.

(For dates of conventions and regular meetings of railroad associations and engineering societies see advertising page xi.)

St. Louis Railway Club.

A regular meeting of the St. Louis Railway Club will be held at the Southern Hotel, Friday, Feb. 8, at 3 o'clock p. m. Mr. F. A. Gohen, Master Car Painter of the Big Four, will present an answer to Question No. 17, on "The best coating to prevent effect of salt water on iron of refrigerator cars," and replies to other questions requested in the circular dated Nov. 28, 1900, not previously reached, will be read and discussed.

Saratoga Conventions.

The United States Hotel will be opened June 15, in time to accommodate members and guests of the Master Mechanics' and Master Car Builders' conventions. Special efforts will be made to accommodate those who will attend the conventions. The hotel is the largest in Saratoga, and is near the headquarters, and opposite the Saratoga Theater, where the meetings of the associations are held. Rooms may be reserved now by applying to the proprietors, Messrs. Gage & Perry, Saratoga Springs, N. Y.

Car Foreman's Association of Chicago.

A meeting of the Car Foreman's Association of Chicago will be held Wednesday evening, Feb. 13, at room 209 Masonic Temple, Chicago. A number of topics regarding car interchange will be discussed, and Mr. S. Shannon will read a paper on loose draft rigging and neglected bodies of cars. Mr. O. M. Stimson, Master Car Builder, Swift & Co., Chicago, has been appointed Chairman of a Committee on Revision of the Interchange Rules. The recommendations of this committee will be presented at the March meeting, and suggestions as to changes in the rules should be sent to Mr. Stimson at an early date.

PERSONAL.

(For other personal mention see Elections and Appointments.)

—Mr. W. C. Tunstall has been appointed a member of the Alabama Railroad Commission to succeed Mr. Osceola Kyle, appointed Judge.

—Mr. H. C. Davis, President of the State Line & Sullivan (Lehigh Valley), died recently at his home in Philadelphia. He was 62 years old.

—Mr. James H. Thompson, at one time General Manager of the Greenwich & Johnsonville, died Feb. 3 at his home in Greenwich, N. Y.

—The home address of Mr. E. St. John, lately Vice-President and General Manager of the Seaboard Air Line, is No. 72 Bute street, Norfolk, Va., where communications will always reach him.

—Mr. Henry A. Rubidge, Secretary and Auditor of the Chicago & Eastern Illinois, died recently at Magnolia Springs. He was born in Peterboro, Ont., in 1850, and had been with the Chicago & Eastern Illinois for several years.

—Mr. George C. Smith, who has resigned as General Manager of the St. Louis-Louisville Division of the Southern Railway, on Feb. 1, became associated with the Westinghouse interests as Vice-President of the Security Investment Company at Pittsburgh, Pa.

—Mr. W. B. Worthington, Chief Engineer of the Lancashire & Yorkshire Railway, with two of his staff arrived in New York last Saturday, and will sail (returning) in four weeks. He will go as far West as Chicago, and will make as careful study as his time allows of the engineering and transportation features of our railroads.

—Mr. Frederick C. Stevens, who has been since last spring President of the Washington Traction & Electric Company, which includes 11 street railroads and two electric lighting companies, resigned on Jan. 30 in order to give his attention to other interests. Mr. Allan L. McDermott, of Jersey City, a member of Congress from New Jersey, was elected to succeed Mr. Stevens as President of the companies.

—The Supreme Court of Missouri has removed Mr. Joseph Flory, Republican, from the office of Railroad Commissioner, and seated Mr. Joseph P. Rice appointed by Governor Stephens. Mr. Flory contested the right of Mr. Rice to the seat on the ground that Mr. J. T. Herrington, Democrat, who was elected in November, died before the office became vacant, and consequently it could not be filled by appointment, but that another election must be held.

—Mr. John T. Keith, the new Superintendent of the Wyoming Division of the Lehigh Valley at Wilkesbarre Pa., was born Sept. 30, 1853. He entered railroad service as a passenger brakeman on the Pittsburgh & Connellsville, Nov. 5, 1869. He served through the various grades up to passenger conductor until August, 1883 and then as conductor on the Pittsburgh & Lake Erie, becoming Trainmaster for that company in December, 1889. He was made Superintendent of the Mahanoy & Hazleton Division in June, 1898, and was transferred to the Wyoming Division on Feb. 1 last.

—Mr. Samuel Whinery, M. Am. Soc. C. E., is available for an engagement, the company with which he has been connected for the past 15 years having gone out of business. His present address is 45 Glenwood avenue, East Orange, N. J. He would prefer an engagement in an executive and managerial position, much of his recent experience having been in such positions. As an engineer and as an executive officer he is widely known, especially perhaps in Cincinnati and New York. He is now a director of the American Society of Civil Engineers, having served the Society also one term as Vice-President.

—Mr. A. H. Sanford has spent his entire railroad service with the Pennsylvania Company. He was born at Freedom, Portage County, Ohio, Sept. 29, 1866, and was graduated from the Case School of Applied Sciences at Cleveland, Ohio, in 1889. His railroad service began in 1890 as assistant on the Engineering Corps of the Cleveland & Pittsburgh. He was Acting Assistant Engineer of Maintenance of Way for the same company from 1893 to 1896, when he took a similar position with the Pittsburgh, Fort Wayne & Chicago. From 1898 he was Engineer of Maintenance of Way on the Toledo Division and has just been transferred to a similar position at Louisville, Ky., on the Louisville Division.

—Mr. Henry Carr Ferris, the new Assistant Chief Engineer of the Ohio Central Lines at Columbus, Ohio, was born March 1, 1865. After taking the degree of mechanical engineer at Stevens Institute of Technology in 1888, he spent a year in the Engineer's office of the Massillon Bridge Co. In June, 1889, he entered the service of the Toledo, Columbus & Cincinnati as levelman, and continued with the same company until Dec. 1, 1893, serving as Engineer of Maintenance of Way from July,

1890, and having the duties of Superintendent added from July 1, 1891. He then became Superintendent of the Western Division of the Toledo & Ohio Central, holding that position until Jan. 1 last, when he was made Assistant Chief Engineer of the entire system known as the Ohio Central Lines.

Mr. E. A. Williams, Superintendent of Rolling Stock of the Canadian Pacific at Montreal, was born near Wiscasset, Me., Oct. 4, 1848. He entered railroad service in May, 1865, as a machinist apprentice in the shops of the Milwaukee & Prairie du Chien at Milwaukee, Wis. After that road was absorbed into the Chicago, Milwaukee & St. Paul, in 1874, he continued with the company, serving as a roundhouse foreman at Prairie du Chien until December, 1880; as General Foreman of Locomotive and Car Departments on the Southern Missouri Division at Wells until March, 1886, and then as Assistant Master Mechanic at Milwaukee. He left the Chicago, Milwaukee & St. Paul in July, 1890, to become Master Mechanic of the Minneapolis, St. Paul & Sault Ste. Marie, in charge of Locomotive and Car Departments at Minneapolis, Minn. He became Mechanical Superintendent of the same company in August, 1893. His present appointment as Superintendent of Rolling Stock of the Canadian Pacific took effect Jan. 17.

—Mr. V. B. Lang, as noted in these columns, becomes Assistant Superintendent of Motive Power of the Chicago & Alton at Bloomington, Ill. Mr. Lang was born in New York City and was educated at the Cooper Union. He finished his apprenticeship in the railroad machinists' trade in the shops of the New York Central & Hudson River in 1880, and for three years he was machinist on the Erie at Port Jervis, N. Y. He entered the service of the New York, West Shore & Buffalo as foreman of the machine shops at Kingston, N. Y., and held similar positions at Coeymans, N. Y., and New Durham, N. J., serving in the latter place as General Foreman until January, 1894, when he became Master Mechanic at Louisville, Ky., of the Louisville Southern, which was afterward absorbed into the Southern Ry. Continuing at Louisville until October, 1897, he was appointed Master Mechanic of the Chattanooga Division of the Cincinnati, New Orleans & Texas Pacific at Chattanooga, Tenn. He entered the service of the Chicago & Alton, on Feb. 12, 1900, as Division Master Mechanic, at Bloomington, Ill. His appointment as Assistant Superintendent of Motive Power took effect on Jan. 15.

—We recently published a sketch of the life of Mr. John Clark Sims, formerly Secretary of the Pennsylvania Railroad Company, who lately died. Following is an extract from a minute adopted at a meeting of the Board of Directors, held Jan. 9: "He had just completed his twenty-fifth year of faithful and efficient service, when a career which seemed to promise many more years of useful activity was suddenly cut short, and the company deprived of a valued and most capable officer. Singularly adapted by nature and fitted by education and experience for the performance of the important duties entrusted to him, his conduct was actuated by a high sense of duty which won for him the entire confidence of all his associates. To the members of this Board, so long accustomed to his hearty greeting, his unfailing courtesy, and his cheery voice, his untimely death has brought a feeling of profound sorrow and a deep sense of personal loss. A lover of his fellows, he was in turn beloved by all sorts and conditions of men, and by his ever ready sympathy, his helping hand, and cheering word, he had specially endeared himself to a wide circle of devoted friends. In making this record, the Board gives but brief and inadequate expression of their affectionate regard for him during his long association with the affairs of the company."

—Mr. Geo. W. Lewis, Superintendent of the Kentucky Division of the Chesapeake & Ohio, at Ashland, Ky., was born at Walnut Hill, Cincinnati, Ohio, Nov. 8, 1858. He took the degree of civil engineer at the University of Cincinnati, in June, 1880, and entered railroad service the following September as Resident Engineer of the Vernon, Greensburg & Rushville. In July of the following year he became Engineer of the Kentucky Central, and in March, 1884, Assistant Engineer of the same company, and of the Elizabethtown and Big Sandy Divisions of the Chesapeake & Ohio. For three years from July, 1885, he was with a contractor on the Falls of the Ohio River at Louisville, Ky. In March, 1888, he became Engineer for the reorganization committee of the Chesapeake & Ohio, with jurisdiction over the Cincinnati extension and the Cincinnati bridge. He has continued with the company since that date, serving as Engineer of Maintenance of Way on the Cincinnati Division from Jan. 1, 1889; Engineer in charge of real estate for the entire system from March 31, the same year; Superintendent of the Lexington and Big Sandy divisions from May 1, 1892; Superintendent of the Cincinnati Division from April 1, 1893, and now Superintendent of the Kentucky Division.

—Mr. Lewis Neilson, who succeeds Mr. Sims as Secretary of the Pennsylvania Railroad Company, was born at Florence, N. J., on Sept. 30, 1860, and prepared for the University of Pennsylvania at the Episcopal Academy in Philadelphia. He entered the University of Pennsylvania in June, 1877; was graduated from the college department in June, 1881, and entered the service of the Pennsylvania as weighing clerk. In 1883 he entered the office of Mr. John P. Green, then Fourth Vice-President, as stenographer; Dec. 1, 1885, was promoted to Chief Clerk in that office, and continued to occupy the position under Mr. Green's several promotions to the First Vice-Presidency. During his long service in Mr. Green's office he also performed work in the President's office, and always acted in place of the latter's Secretary when the incumbent was absent. On May 1, 1897, Mr. Neilson was appointed Chief Clerk to the Secretary. On the 26th of the same month he was appointed Assistant Secretary pro tem. on account of the illness of the Assistant Secretary, and continued to fill that office, in addition to performing his duties as Chief Clerk, until June 1, 1898, when he was appointed Assistant Secretary of the Pennsylvania Railroad Company and of the Philadelphia, Wilmington & Baltimore. On June 27, 1898, he was appointed to fill the same position with the Philadelphia & Baltimore Central Railroad Company, and on June 3, 1898, Secretary of the Manor Real Estate and Trust Company. Mr. Neilson has charge of the lighting, heating, policing and care of the general office building with its two thousand occupants. He is also the Division Officer of the Relief Department for the general office. On Jan. 23, 1901, he was elected Secretary of the Pennsylvania and of the Philadelphia, Wilmington & Baltimore. Mr. Neilson has for many years been prominent in the graduate councils of the University of Pennsylvania, and is an amateur musician of some attainment. His intelligence, good judgment and thoroughness in business organization and detail have rendered his services of great value to the Pennsylvania Railroad Company, and to the many societies and associations with which he has been connected.

ELECTIONS AND APPOINTMENTS.

Arkansas Southern.—W. W. Brown has been elected Second Vice-President and T. J. Gaughan Secretary.

Atchison, Topeka & Santa Fe.—The position of Superintendent of Car Service is abolished and that of Superintendent of Transportation created, with A. W. Towsley in charge, effective Feb. 1.

Augusta Southern (Southern).—H. McWhorter was recently elected President, succeeding J. U. Jackson, resigned.

Central New England.—W. J. Martin has been appointed Traffic Manager in addition to his duties as Superintendent, and D. A. Geraty, General Freight Agent, with headquarters at Hartford, Conn., effective Feb. 1.

Chicago & Alton.—M. L. Morris has been appointed Engineer Maintenance of Way, with headquarters at Springfield, Ill.

Chicago, Milwaukee & St. Paul.—J. O. Armour has been elected a Director, succeeding the late P. D. Armour.

Cleveland, Cincinnati, Chicago & St. Louis.—A. S. Ingalls, heretofore Assistant Division Superintendent at Cleveland, Ohio, has been appointed Superintendent.

Colorado Midland.—Chas. D. Simonson has been appointed General Eastern Agent, with headquarters at No. 425 Broadway, New York City.

Colorado Springs & Cripple Creek District.—S. J. Henry has been appointed Traffic Manager, with headquarters at Colorado Springs, Col.

Cuba Company.—R. G. Ward was, on Jan. 25, appointed Acting Manager of Construction for the Western Division.

Delaware, Lackawanna & Western.—David Brown has been appointed Asistant Superintendent of Motive Power and Machinery, with headquarters at Scranton, Pa. M. B. Casey has been appointed Acting Superintendent of Car Service, with headquarters at Scranton, Pa.

Florida East Coast.—R. T. Goff has been appointed General Superintendent and is succeeded as Superintendent by D. P. Wing.

Grand Trunk.—J. E. Muhlfeld has been appointed Master Mechanic, succeeding A. G. Elvin, of Montreal, resigned. E. D. Jameson becomes Master Mechanic of the Western Division, with headquarters at Battle Creek, Mich., having jurisdiction over all matters pertaining to this department, excepting those at Fort Gratiot Shops and Port Huron Tunnel Pumping Station. J. McGrath becomes Master Mechanic in charge of the Fort Gratiot Shops and Port Huron and Sarnia Pumping Stations, effective Feb. 1.

Kansas City, Fort Scott & Memphis.—N. Thayer has been elected Chairman of the Board, succeeding H. H. Hunnewell, resigned.

Kansas City, St. Joseph & Council Bluffs (Chicago, Burlington & Quincy).—The jurisdiction of G. M. Hohl, Superintendent, has been extended to include the terminals at St. Joseph.

Lehigh Valley.—G. S. Brantingham, Superintendent of Floating Equipment, having resigned, the position is abolished. J. H. Clark has been appointed Chief Engineer in charge of Maintenance of Floating Equipment.

Missouri, Kansas & Texas of Texas.—T. Noel has been appointed Assistant General Freight Agent, with headquarters at Houston, Tex., succeeding J. L. West, transferred.

National of Tehuantepec.—M. R. Mellor, Assistant Manager, was appointed Chief Engineer also.

New York Central & Hudson River.—F. L. Pomeroy has been appointed Assistant Traffic Manager, with headquarters at Grand Central Station, New York City. F. W. Chaffee, heretofore Master Car Builder at West Albany, has been appointed General Inspector for the Car Department, with headquarters at Albany Passenger Station, and will have supervision of all car inspection points on the road, and the condition of car equipment in service, reporting to the Assistant Superintendent of Rolling Stock. The position formerly held by Mr. Chaffee is abolished. James Buchanan, Division Superintendent of Motive Power at West Albany, has resigned and, until further notice, reports and correspondence regarding Locomotive Department matters on the Middle and Hudson Divisions; also reports and correspondence regarding Car Department matters on the Middle Division, will be sent to E. E. Davis, Assistant Superintendent Motive Power, at West Albany, who will assume direct supervision of the locomotive and car shops at West Albany, in addition to his other duties, conferring in matters pertaining to the Car Department, with the Assistant Superintendent Rolling Stock. John Howard, heretofore Acting Division Superintendent Motive Power of the Pennsylvania Division, has been appointed Division Superintendent Motive Power, succeeding George Thompson, resigned. E. L. Somers has been appointed General Western Freight Agent, with headquarters at 205 South Clark street, Chicago, Ill. F. E. Herriman has been appointed General Coal Agent, effective Feb. 1.

New York, Chicago & St. Louis.—S. K. Blair, heretofore Trainmaster, has been appointed Division Superintendent at Fort Wayne, Ind., succeeding C. D. Gorham, who has become Division Superintendent at Buffalo, N. Y.

Northern Pacific.—A. M. Cleland has been appointed Assistant General Passenger Agent at St. Paul, Minn., succeeding A. L. Craig, resigned.

Ohio River & Lake Erie.—E. E. Scranton, heretofore General Manager of the Alliance & Northern, has been appointed Superintendent at Alliance, Ohio, of the O. R. & L. E., succeeding H. D. Emerson, resigned.

Oregon Railroad & Navigation.—A. L. Craig has been appointed General Passenger Agent at Portland, Ore.

Oregon Short Line.—S. W. Eccles, General Traffic Manager at Salt Lake City, Utah, has resigned, effective Feb. 15.

Pennsylvania.—A. J. County and K. S. Green have been appointed Assistant Secretaries of this company and the Philadelphia, Wilmington & Baltimore. Mr. County is also Superintendent of the Employees' Saving Fund. Lewis Neilson succeeds the late Mr. Sims as Secretary of the P., W. & B.

Quincy, Carrollton & St. Louis.—F. Carter has been appointed Auditor, succeeding J. K. Connor, resigned.

Red, White, Blue and Canada Southern Lines.—W. F. Wilson has been appointed General Manager, succeeding F. L. Pomeroy, resigned.

St. Louis, Iron Mountain & Southern (Missouri Pacific).—Effective Feb. 1, the office of Acting Superintendent of the Central Division is abolished and the division is divided as follows: The lines between Coffeyville, Kan., and the south end of the lower bridge, East Little Rock, Ark., will be known as the Central Division. The lines between Little Rock, Ark., and Alexandria, La., will be known as the Valley Division. W. T. Tyler has been appointed Superintendent of the Central Division, with headquarters at Van Buren, Ark., and F. B. DeGarmo Superintendent of the Valley Division at Mer Rouge, La. The jurisdiction of Superintendent W. J. McKee has been extended over the terminals at Little Rock, Ark.

San Pedro, Los Angeles & Salt Lake.—R. E. Wells, heretofore Assistant General Manager of the Santa Fe, Prescott & Phoenix, has been appointed General Manager of the S. P., L. A. & S. L. (See Los Angeles & Salt Lake, R. R. Construction column, Dec. 21, 1900, p. 852.)

Seaboard Air Line.—C. W. Lee has been appointed Master Mechanic, with headquarters at Fernandina, Fla.

Tennessee Central.—W. A. Beatty has been appointed General Freight and Passenger Agent, succeeding L. C. Gunn, assigned to other duties.

Texas Central.—D. J. Timlin has been appointed Master Mechanic at Walnut Springs, Tex., succeeding W. B. Warren.

Tifton, Thomasville & Gulf.—G. J. Huson has been appointed Superintendent.

RAILROAD CONSTRUCTION.

New Incorporations, Surveys, Etc.

ATCHISON, TOPEKA & SANTA FE.—Citizens of Tulsa, Ind. T., are asking the company to extend its Bartlesville branch from Owasso southwest about 15 miles to their city. The branch was completed to Owasso last year.

BEAUMONT & SOUR LAKE.—This company was incorporated in Texas, Jan. 30, with a capital stock of $90,000, to build a railroad from a point on the Gulf, Beaumont & Kansas City, in Hardin County, at a point near Smith's Siding, to run southwest about 15 miles to Sour Lake. The principal office is Hooks Switch. Among the incorporators are: J. F. Keith, B. R. Norvell and Geo. C. Young.

BEAUMONT NORTHERN.—This company was incorporated in Texas, Jan. 29, with a capital stock of $100,000, to build a railroad from Beaumont north about 35 miles into Jasper County. The general office is at Beaumont. The incorporators are: W. A. Fletcher, E. A. Fletcher, N. N. Crary and others, all of Beaumont.

BRITISH COLUMBIA ROADS.—Macdonald, Boland & Thompson, of Toronto, are applying to the Dominion Parliament to build a line from the International boundary near Cascade City, B. C., west along the valley of the Kettle River to Carson, on the boundary line, with a 50-mile branch from Grand Forks up the North Fork of the Kettle River, and another from Grand Forks southwest via Greenwood to Midway.

A. B. McGovern, of Ottawa, is making application to the Dominion Parliament to build a line from Kitemat Harbor, B. C., east and north to Teslin Lake, thence along the shore of Teslin Lake and the Hootalinqua River to the intersection of the Yukon River, thence to Dawson City.

BRITISH YUKON.—Chrysler & Bethune, of Toronto, are applying to Parliament for an act authorizing this company to build a line from Fort Selkirk to Dawson City: thence west to the 141st meridian, and branch lines not over 50 miles long.

CANADIAN NORTHERN.—Munson & Allan, solicitors for Mackenzie & Mann, at Winnipeg, have given notice of application to Parliament to build a railroad from the International boundary line between Ranges 1 and 6, west to the town of Gladstone, B. C., with branches from points on the main line to Carman and Holland, and the towns of Carberry and Neepawa, and a branch line east from Mordon to connect with the Canadian Northern at some point between Township 6 and the International boundary line, and to some point on the Western boundary of the province.

CAROLINA NORTHERN.—The Carolina Construction Co. is reported to have taken the contract for the extension from Barnesville, N. C., south about 29 miles to Marion, S. C. A. L. Cumming, of Lumberton, N. C., is Chief Engineer. (Oct. 5, 1900, p. 661.)

CHESAPEAKE BEACH.—Cogan Bros., of Washington, D. C., are reported to have taken the contract for filling in all the trestle work on this line which was completed about a year ago.

CHESAPEAKE TRANSIT.—Isaac Kalker & Son, of Philadelphia, are reported to have taken the contract for building this line from Norfolk, Va., to Cape Henry, about 20 miles. Abram C. Mott, of the Abram-Cox Stone Co., of Philadelphia, is President. (Construction Supplement, July 27, 1900.)

CHICAGO & NORTHWESTERN.—An officer of the Fremont, Elkhorn & Missouri Valley writes that there is no truth in the report that this company is making surveys for an extension from Valentine, Neb., toward Scranton, Colo. (Jan. 11, p. 34.)

The company is reported considering plans for an extension of the Clinton-Anamosa branch from Anamosa, Iowa, northwest about 90 miles through Jones, Linn, Benton, Black Hawk, Grundy and Butler counties to Parkersburg, on the Blue Earth-Belle Plaine Division.

CHICAGO, ROCK ISLAND & PACIFIC.—Arrangements are being made, according to report, for straightening the Kansas City Division in Washington and Jefferson counties, Iowa. Surveys have been completed and the company has asked the Board of Railroad Commissioners to permit condemnation proceedings along the survey.

Right of way is reported being secured for a cut-off in Jefferson County, Iowa, between Brighton and Perlee.

CHOCTAW, OKLAHOMA & GULF.—The contracts for building the extension from Hartshorne, Ind. T., southwest 117 miles to Ardmore, on the Atchison, are reported

let to Bernard Corrigan, Kansas City; P. D. Dowling, St. Louis, and G. M. Garvey, Memphis. The construction headquarters will be at South McAlester. (Dec. 14, 1900, p. 834.)

Cleveland & Southern.—This company has been organized to build an electric railroad from Cleveland southeast via Berea, Medina, Wooster, Creston, Seville and Lodi to Wadsworth. From Cleveland to Berea it is proposed to use the tracks of the Cleveland, Elyria & Western. (Oct. 5, p. 662.) W. H. Lamprecht is President, A. H. Pomeroy, Vice-President, and F. T. Pomeroy, Secretary and Treasurer.

Columbus, Winchester & Lancaster Traction.—This company has obtained franchises, according to report, for building an electric line from Columbus, Ohio, southeast about 30 miles via Groveport and Winchester to Lancaster. The intention is stated to be to begin building early in the spring. Among the Columbus people interested are: R. E. Jones, D. C. Beggs, Howard Park and F. A. Simons.

Eastern Texas.—A contract is reported let for the first 28 miles of this line from Lufkin, Tex., to Crockett. R. H. Keith, President of the Central Coal & Coke Co., Kansas City, Mo., is President. (Nov. 30, 1900, p. 802.)

East Shore.—This company, whose application for incorporation was recently noted, proposes to build an electric line from Yarmouth, N. S., to Midland. The plan is to acquire the Yarmouth Street R. R., and to push the building forward as soon as the charter can be obtained. Geo. Bingay, Q. C., of Yarmouth, N. S., is interested. (Jan. 25, p. 69.)

Erie.—Drake & Stratton, of Middletown, N. Y., have been awarded a contract for building the Goshen cut-off of 2¾ miles west of Goshen, N. Y. Building is delayed pending decisions of the courts. (Aug. 3, 1900, p. 531.)

Fort Smith & Western.—The people of Fort Smith, Ark., are said to have raised the proposed bonus of $100,000 for this line from Fort Smith west through Indian Territory about 175 miles to Guthrie, Okla. T. Geo. Hayden, of Ishpeming, Mich., is President, and F. W. Bond, of St. Louis, Mo., is Chief Engineer. (Sept. 21, 1900, p. 628.)

Fort Worth & Northwestern.—Efforts are being made to finance this line, which was projected some time ago from Fort Worth, Tex., northwest about 120 miles to Throckmorton. Surveys are completed. (Oct. 28, 1898, p. 786.) B. B. Paddock, of Fort Worth, Tex., is President. (Official.)

Grand Trunk.—An officer writes that nothing definite is determined as to double tracking between Portland, Me., and Montreal. (Jan. 25, p. 69.)

Intercolonial & James Bay.—Messrs. Archer & Perron, of Montreal, are applying to the Dominion Parliament for a charter for this company to build a railroad through Ontario and Quebec from Kippewa Lake to Lake Abbittibi and James Bay, or an optional line from Kippewa Lake through either the Province of Ontario or Quebec to Lake Abbittibi to James Bay, with power to connect and make running arrangements with any line running within three miles of their line, or to purchase the same; also to place steamers on the lakes and rivers, build docks and wharves, telegraph lines and do a mining business generally.

Kansas City, Fort Scott & Memphis.—An officer writes that the company proposes to lay, this spring, on the Arkansas District, between Hoxie, Ark., and Memphis, Tenn., 43 miles of 75-lb. rail, releasing 56-lb. rail; also about 22 miles of 75-lb. rail on the Kansas City, Memphis & Birmingham, between Memphis & Tupelo, Miss., releasing 60-lb. rail. The company will also lay 32 miles of 75-lb. rail on the Joplin District, between Cherokee and Fort Scott, and 12 miles on the Springfield District, between Fort Scott and Springfield. (Jan. 25, p. 69.)

Kingston & Central Mississippi.—An officer writes that this company is building from Laurel, Miss., north 45 miles to Montrose. The line runs through an undeveloped country, with no intermediate towns as yet laid out on the map. Among the points to be located along the line are Bay Spring and Hamlet. The company intends to push through to Montrose without delay, and has material on the way for 24 miles of line, which it hopes to have completed by Jan. 1, 1902. There are 150 men at work. Francis Lampe, of Laurel, Miss., is President; F. W. Pettibone, Laurel, Treasurer and Manager; Geo. Beckner, Superintendent and Engineer. The Eastern representative is E. K. Stallo, of the Waldorf-Astoria, New York City, Vice-President. (Jan. 25, p. 69.)

La Crosse, Black River Falls & Neillsville Electric.—The route of this proposed line is from La Crosse, Wis., northeast about 60 miles via Onalaska, Midway, Holmen, Melrose, Irving and Black River Falls to Merrilan. Ten miles of right of way is secured and one town is bonded for $9,500. The ultimate terminal is Ashland, 200 miles from La Crosse. (Jan. 18, p. 52.) Paul McHugh, of Midway, is President, and Earl Pooler, Onalaska, Chief Engineer. (Official.)

Louisville, Henderson & St. Louis.—An extension is reported under consideration through a portion of Hancock County, Ky., from a point on the main line near Hawesville, to reach coal deposits.

Manitoba Roads.—Application is being made to Parliament for a railroad from the junction of the International boundary and the western shore of the Lake of the Woods, thence to Emerson, Rosenfelt, Rathwell, Carberry, Neepawa, and the western boundary of the province, together with a branch from a point on the line at Petrel to the eastern boundary of the province.

Mexican Roads.—The Government has granted a concession, according to report, for a standard gage road from Saltillo, State of Coahuila, to the town of Artsaga, in the eastern part of the State.

Missouri Pacific.—People of Jefferson City, Mo., are obtaining right of way to aid this company in a cut-off along the river from Jefferson City northwest about 40 miles to Boonville, which would give a water grade nearly all the way from Kansas City to St. Louis.

Norfolk & Lynn Haven.—This company, which proposes to build a line from Norfolk, Va., to a point on Lynn Haven Bay, eight miles, will open its subscription books for capital stock on Feb. 9. Colonel Wm. Lamb, of Norfolk, is interested. (Construction Supplement, July 27, 1900.)

Northern Pacific.—An officer confirms the statement that this company is making a survey for a branch 21 miles long from Scappoose Station, Ore., on the main line, to run west to Pittsburgh, on the Nehalem River. No contracts have been awarded nor proposals requested. (Jan. 25, p. 70.)

Oil Belt Traction.—The Fort Wayne & Southwestern Traction, which is building an electric line from Fort Wayne, Ind., southwest about 25 miles to Huntington (Jan. 18, p. 51), is reported to have made a proposition to build the Oil Belt Traction, which was organized last year to build an electric road from Huntington southwest about 30 miles via Montpelier, Portland, Bluffton and Hartford City to Marion. Among those interested in the new company are: W. M. Paige, of Montpelier; J. A. Jaqua, of Portland, and Adam Beck, of Huntington.

Pennsylvania.—The City Council of Camden, N. J., has passed an ordinance granting this company permission to build a belt line along the river front. The condition is that the Reading or any other railroad shall be allowed to use the tracks upon payment of a proportionate amount of the cost and maintenance.

Surveys are reported in progress for a cut-off between Latrobe, Pa., and Beatty, about two miles, to eliminate sharp curves.

Portland, Nehalem & Tillamook.—Articles of incorporation for a company, with a capital stock of $1,000,000, have been drawn, to build a railroad from Portland, Ore., west along the Nehalem River to the city of Nehalem and to Tillamook, on the Pacific coast, south of Nehalem. A number of Portland people are interested in the project, among whom are W. H. Corbett, Wm. M. Ladd, J. C. Ainsworth and A. L. Mills. This is probably the same project as that referred to under Oregon Roads. (Jan. 25, p. 70.)

Quebec & James Bay.—Hon. R. R. Dobell, Hon. Senator Paquet, Hon. G. Garneau, and Messrs. G. Lemoine, J. T. Ross, G. Tanquay, W. Price, W. A. Marsh, T. A. Piddington, James Guthrie Scott, railroad manager, all of Quebec City, and Benj. A. Scott, mill owner, of Roberval, Que., are applying to the Quebec Legislature for incorporation of this company to build a line from the city of Quebec, or from some point on the Quebec & Lake St. John between Quebec and Roberval, to James Bay, and to the mouth of the Nottaway River thereon.

Quebec Roads.—D'Arcy Scott, of Ottawa, is applying for a charter to build a railroad from the northern terminus of the Quebec bridge to the city of Quebec, and from the southern terminus of the same to the intersection of the Grand Trunk with the Drummond Counties Ry., at Chaudiere curve, Levis County.

Richmond & Petersburg Electric.—This company is building an electric line from Richmond, Va., south 24 miles via Manchester, Drury's Bluff, Peck, Swift Creek and Cotton Mills to Petersburg. J. F. Bradley and Carpenter Bros. have the contract for grading, and the Carwood Lumber Co. for poles. About two miles is completed. It is expected to begin track laying Feb. 15. There are 150 men at work. The maximum grades are 3 per cent. (Jan. 25, p. 70.) Major Curbin Warwick is President; J. L. Haner, Secretary, and J. F. Pfetch, General Manager, all of Richmond, Va. (Official.)

St. Lawrence Southern.—Honore Gervais, of Quebec, is applying to the Provincial Legislature to incorporate this company to build a line from Valleyfield, through the counties of Beauharnois, Chateauguay, Laprairie, Chambly, St. Johns, Rowville and St. Hyacinthe to the city of St. Hyacinthe, Que.

Southern.—Surveys are reported in progress for a connecting line from Clinton, Tenn., south about 30 miles to Loudon.

Tennessee Central.—Noel & Thompson, of Chattanooga, Tenn., are reported to have the contract for 35 miles of the extension between Nashville & Clarksville. (Dec. 28, 1900, p. 868.)

Texas Southern.—An officer writes that the company has bought a private road running from Gilmer, Tex., east 21 miles toward Harlton, leaving a gap of about 12 miles between the purchased road and the old line which the company expects to build this year. (Construction Supplement, July 27, 1900.)

Unadilla.—The project is being revived, according to report, for an extension of this line from New Berlin to Oneonta.

Virginia Roads.—N. B. Dotson, of Wise, Va., President of the Virginia Coke & Steam Coal Co., writes that the company has nearly completed the location of its proposed railroad from Norton, or Wise, Va., via Indian Creek, to Bold Camp Creek. (Construction Supplement, July 27, 1900.)

James Godwin, of Fincastle, Va., holds a charter for an electric railroad from Fincastle to Roanoke, 12 miles. Right of way is also secured.

Yallaha & Western.—This company was incorporated in Florida, Jan. 31, with a capital stock of $5,000, to build a railroad from a point in Township 20, south of Range 25 East, to Okahumpka, seven miles, both in Lake County. Elwin T. Haines is President; Elam J. M. Padgett, Vice-President, and George Kingsley, Secretary and Treasurer. The headquarters are Leesburg.

GENERAL RAILROAD NEWS.

Alliance & Northern.—Garfield, Garfield & Howe, attorneys, Garfield Bldg., Cleveland, Ohio, write that a controlling interest represented by a majority of the stock of this company, has been bought at private sale, but they are not yet ready to give out information with reference to proposed plans.

It is known, however, that the same men are interested in the Lake Erie, Alliance & Wheeling, whose incorporation was noted last week, which proposes to build from Fairport, Ohio, in Lake County on Lake Erie, to run south about 125 miles to Bridgeport, opposite Wheeling, W. Va. The Alliance & Northern would easily form a part of this route. It is further stated that the Ohio River & Lake Erie may be included. (Railroad Construction, Feb. 1, p. 88.)

Brockville, Westport & Sault Ste. Marie.—W. H. Cole has been appointed receiver to succeed James Mooney, of Brockville, Ont. The company has been in the hands of receivers for several years. (March 17, 1899, p. 199.)

Brooklyn Rapid Transit.—The Guaranty Trust Co., New York, and Harvey Fisk & Sons, offer at 97½ and interest, $9,500,000 Nassau Electric consolidated mortgage 4½ per cent. gold bonds, due Jan. 1, 1951, principal and interest guaranteed by the Brooklyn Heights Co., through which company the B. R. T. controls the property of the Nassau Electric. The bonds offered are part of the issue of $15,000,000, of which $4,525,000 is reserved to retire underlying bonds. (March 23, 1900, p. 194.)

Chicago & Alton.—Twelve Mississippi River bridge bonds have been drawn by lot for payment April 1, at the company's office, New York.

Chicago & Northwestern.—Sinking fund bonds of 1879, aggregating $62,000 of 6 per cents, and $73,000 of 5 per cents, have been drawn for redemption at the Farmers' Loan & Trust Co., New York, at 105, interest to Feb. 1. (Jan. 11, p. 34.)

Chicago Terminal Transfer.—This property has been taken over by E. H. Harriman through the purchase of the holdings of the German interests. The price paid was 33 for the preferred, and 12 for the common stock, payable one-third in cash and the rest in 4 per cent. notes, due in two years and redeemable at any time at the option of Kuhn, Loeb & Co. (April 20, 1900, p. 264.)

Cincinnati, Jackson & Mackinaw.—The sale of securities under the reorganization, which was to have been held Jan. 30, was again postponed because of a temporary injunction. (Jan. 18, p. 52.)

Denison & Sherman.—This company is seeking to buy the street railroads in Denison and Sherman, Tex., aggregating about 10 miles, to form a part of the proposed interurban electric line between the two cities. It has asked for the issue of bonds and capital stock to build the road and make the purchase. (Dec. 7, 1900, p. 818.)

Little Miami.—The stockholders, on Jan. 29, approved of the proposed mortgage of $3,000,000 3½ per cent. bonds for betterments and improvements, and for retiring other bonds. (Jan. 11, p. 34.)

Mobile & Ohio.—The Southern Ry. has made arrangements to acquire the general mortgage bonds of the M. & O., which carry the control of that company. Full particulars are given in another column.

New Orleans & Western.—Holders of first and second mortgage bonds are notified by Stephen Peabody, chairman of the reorganization committee, that changes have been made in the reorganization plan of Aug. 1, 1899, and holders of bonds under the old plan may withdraw the same up to March 5, at the office of the Secretary, 36 Wall street, New York. (Sept. 1, 1899, p. 620.)

Ottawa & Gatineau.—A. B. McGovern, of Ottawa, is asking the Dominion Parliament to grant an act empowering this company to change its name to the Ottawa, Gatineau & Western Ry., and to acquire or amalgamate with the Pontiac Pacific Junction Ry., Hull Electric Ry., Ottawa & New York Ry., Ottawa Interprovincial Bridge Co., Ottawa Electric Ry., and the Kingston & Pembroke Ry.

Pennsylvania Company.—Kuhn, Loeb & Co., New York, have bought $10,000,000 3½ per cent. 40-year gold trust bonds, guaranteed by the Pennsylvania R. R. These bonds are a portion of the $20,000,000 issue authorized in 1897, of which $4,950,000 is outstanding. The bonds are secured by a pledge of an equal amount of the 7 per cent. guaranteed special stock of the Pittsburgh, Fort Wayne & Chicago. The proceeds from the new bonds are to be used for improvements, etc.

Pittsburgh, Connellsville & Wheeling.—This company is offering $1,655,000 of 5 per cent. 30-year gold bonds for its new road, now building from Connellsville, Pa., west to Wheeling, W. Va., with a branch to Moundsville. (Railroad Construction column, Jan. 4, p. 16.)

Reading.—The company has arranged to issue $23,000,000 of 50-year 4 per cent. collateral trust bonds, secured by a deposit of stock of the Central of New Jersey, recently bought at 160; also of the entire capital stock of the Perkiomen R. R., and a minority interest in the capital stock of the Port Reading. The bonds are to be used in connection with the acquirement of the Central of New Jersey, and are to be shortly offered for sale. (C. of N. J., Jan. 18, p. 52.)

The Reading Coal & Iron Co. is sending out notices to holders of P. & R. 10-year sinking fund 5 per cent. bonds, maturing Feb. 1, 1902, offering to extend the principal of bonds for 30 years at 4 per cent. Holders may present the same after Feb. 1, and not later than June 1. These bonds will retain their present security and in addition will be guaranteed, both principal and interest, by the Reading Co.

Richmond, Fredericksburg & Potomac.—The Board of Sinking Fund Commissioners of Virginia have advertised for bids for the State's holdings in this property.

Rutland.—P. W. Clement, President, has issued a circular letter to the stockholders explaining that in accordance with recent amendments to the charter of the State of Vermont, the directors have determined to retire all the common stock presented on or before Feb. 15, and replace it with preferred stock at one share of preferred for each 10 shares of common.

St. Claire, Madison & St. Louis Belt.—The bondholders have had submitted to them a reorganization plan prepared by the Whitaker committee. The plan is said to provide for the issue of $800,000 of 4 per cent. bonds, of which $50,000 is to be retained in the treasury. The road went into the hands of a receiver on Jan. 15, 1897. (July 15, 1900, p. 488.)

St. Louis & San Francisco.—Proposals will be received up to noon, Feb. 11, for the sale of 6 per cent. bonds of 1880, for the sinking fund. United States Trust Co., New York City, trustee.

Southern Pacific.—Announcement is made that all the stock held by Speyer & Co., and the late C. P. Huntington has been sold to the Harriman Syndicate, represented by E. H. Harriman and the banking house of Kuhn, Loeb & Co. For further particulars see another column.

South St. Paul Belt.—This company's property, which forms a belt line south of the city of St. Paul, Minn., has been bought by John R. Hastings for persons not named, and the property is now being transferred to the new owners.

York Southern.—The stockholders, on Feb. 2, voted to ratify the agreement for consolidation of the company with the Baltimore & Lehigh. (Jan. 25, p. 70.)

Youngstown-Sharon Railway & Light.—This company has issued $2,500,000 capital stock, and has mortgage authorized of $2,500,000, of which $2,000,000 is issued. It has been organized to take over all the electric railroads in Youngstown, Ohio, and Sharon, Pa., and to build a connecting line between the two cities. The proceeds of the new bonds are to provide for improvements, additions, etc. A. M. Hyatt is President; Harlan W. Whipple, Vice-President, and Leighton Calkins, Secretary, all of 60 Grand street, Jersey City, N. J. (Railroad Construction column, Dec. 14, 1900, p. 834.)